



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

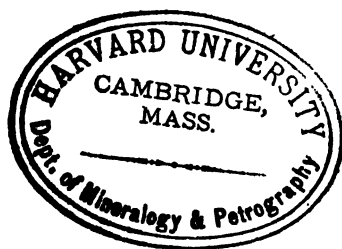
About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

HARVARD UNIVERSITY



**LIBRARY OF THE
MINERALOGICAL
LABORATORY
UNIVERSITY MUSEUM**



Established by BENJAMIN SILLIMAN in 1818.

THE
AMERICAN
JOURNAL OF SCIENCE.

EDITOR: EDWARD S. DANA.

ASSOCIATE EDITORS

PROFESSORS GEORGE L. GOODALE, JOHN TROWBRIDGE,
W. G. FARLOW AND WM. M. DAVIS, OF CAMBRIDGE,

PROFESSORS ADDISON E. VERRILL, HORACE L. WELLS,
L. V. PIRSSON AND H. E. GREGORY, OF NEW HAVEN,

PROFESSOR HENRY S. WILLIAMS, OF ITHACA,

PROFESSOR JOSEPH S. AMES, OF BALTIMORE,

MR. J. S. DILLER, OF WASHINGTON.

FOURTH SERIES

VOL. XXX—[WHOLE NUMBER, CLXXX.]

INDEX TO VOLUMES XXI-XXX.

NEW HAVEN, CONNECTICUT.

JANUARY, 1911.

THE TUTTLE, MOREHOUSE & TAYLOR CO., PRINTERS, 123 TEMPLE STREET.

Index Number one dollar per copy. Sent only to those ordering it.

Jan. 30, 1911.
Mineralogical Laboratory

GENERAL INDEX

OF

VOLUMES XXI-XXX OF THE FOURTH SERIES.

[F] In the references, **heavy-faced type** is used for the numbers of the volumes.

NOTE.—The names of minerals are inserted under the head of MINERALS; all obituary notices are referred to under OBITUARY. Under the heads BOTANY and BOTAN. WORKS, CHEMISTRY and CHEM. WORKS, GEOLOGY, ROCKS, ZOOLOGY, the references to the topics in these departments are grouped together; in many cases the same references appear also elsewhere.

Initial capitals are in general used for the titles of books noticed.

A

- Abbe, C.**, obituary notice of S. P. Langley, **21**, 321.
Abbe, E., memorial to, **21**, 338.
Abraham, H., Ions, Electrons and Corpuscles, **21**, 466.
Absorption and phosphorescence, Brüninghaus, **29**, 189.
Abstammungslehre, Steinmann, **27**, 341.
Academy of Sciences, National, meeting at Baltimore, 1908, **26**, 588; Boston, 1906, **22**, 548; New York, 1907, **24**, 507; Princeton, 1909, **28**, 563; St. Louis, **30**, 430; Washington, 1906, **21**, 406; 1907, **23**, 395; 1908, **25**, 458; 1909, **27**, 418; **29**, 463.
— **Memoirs**, No. 4, Vol. X, **22**, 93.
Actinium, Boltwood, **22**, 537; **25**, 291.
Adams, C. F., Physics, **27**, 339.
Adams, F. D., elastic constants of rocks, **22**, 95; flow of marble, **29**, 465.
Adams, J. M., spectrum and absorption of Röntgen rays, **23**, 91; transmission of Röntgen rays, **23**, 375.
Adirondacks, geology of iron ores of, Newland and Kemp, **26**, 238.
— ice-movement in Southwestern, Miller, **27**, 289.
Aero-physics, units in, McAdie, **30**, 277.
Africa, alkaline rocks of eastern, Arsandaux, **23**, 230.
— Blood-sucking Flies, Austin, **29**, 92.
— diamonds in German Southwestern, **27**, 489.
— Flora of, Thonner, **27**, 344.
— See **South Africa**.
Agassiz, A., Albatross Expedition to Eastern Pacific, **21**, 257; **24**, 450; teeth in Echinonëus, Van Phels, **28**, 490.
— obituary notice, Verrill, **29**, 561.
Air, conductivity of, in intense electric fields, Ewell, **22**, 368.
— periodicity of ionization, Wood and Campbell, **23**, 224.
— liquid, vacuum vessels for, Dewar, **25**, 256.
Alabama, Pleistocene flora, Berry, **29**, 387.
— underground water resources, Smith, **24**, 84.
Alaska, coal resources, Collier, **23**, 314.
— Copper River region, geology, Mendenhall, **21**, 82.
— Geography and Geology, Brooks and Abbe, **22**, 187.
— geological section at Cape Thompson, Kindle, **28**, 520.
— Mesozoic section in, Stanton and Martin, **21**, 181.
— Pliocene climate at Nome, Dall, **23**, 457.

- Alaska**, Yakutat, coastal plain of, Blackwelder, 27, 459.
- Albatross Expedition** to the Eastern Pacific, Agassiz, 21, 257; 24, 450.
- d'Albe**, Two New Worlds, 25, 148.
- Albert shales**, New Brunswick, Lambe, 28, 165.
- Algebra**, Milne, 27, 272.
- Graphic, Schultze, 25, 534.
- Higher, Böcher, 25, 266.
- Allegheny Observatory**, see **Observatory**.
- Allen, E. T.**, polymorphic forms of calcium metasilicate, 21, 89; formation of minerals of composition $MgSiO_3$, 22, 385; rôle of water in tremolite, etc., 26, 101; diopside, calcium and magnesium metasilicates, 27, 1; analysis of metals used in thermometry, 29, 151.
- Allen's Commercial Organic Analyses**, Leffmann and Davis, 29, 263; Davis and Sadtler, 30, 348.
- Alpen**, im Eiszeitalter, Penck and Brückner, 25, 84; 27, 341.
- Alpha-rays**, absorption of, Levin, 22, 8; ionization by, Wheelock, 30, 233; properties of, Rutherford, 21, 172; range of, Duane, 26, 465; retardation, Taylor, 26, 169; 28, 357.
- Alps**, Schmidt's sections, 25, 155.
- See also **Alpen**.
- Aluminium** cell as a condenser, Modzelewski, 27, 338.
- Amaduzzi**, ionization and electric conductivity, 23, 463.
- Amphibole**, formation, 22, 403, 435.
- Anderson, J. W.**, Refrigeration, 25, 524.
- Andes**, Central, physiography of, Bowman, 28, 197, 373.
- Andrews, C. W.**, Tertiary Vertebrata of the Fayûm, Egypt, 22, 465.
- Andrews, E. C.**, corrosion by gravity streams, 30, 86.
- Andrews, L. W.**, determination of arsenic, 27, 316.
- Animal Romances**, Renshaw, 27, 193.
- Animals**, Life of, Ingersoll, 22, 191.
- Anode rays**, Gehrcke and Reichenheim, 25, 522.
- Antarctic Expedition**, National, 26, 588; 27, 271; 29, 198.
- Anticosti Island**, peat beds of, Twenhofel, 30, 65.
- Antlitz der Erde**, Suess, 29, 269.
- Arc**, electric, between metallic electrodes, Cady and Arnold, 24, 383; Cady and Vinal, 28, 89; Cady, 28, 239.
- spectra, Duffield, 25, 147.
- Archæology**, American, Univ. of California publications, 25, 533.
- Argon**, see **CHEMISTRY**.
- Arizona**, Coon Butte (meteor crater or Canyon Diablo), Barringer, 30, 427; Barringer and Tilghman, 21, 402; J. W. Mallet, 21, 347; Farrington, 22, 303; Fairchild, 25, 156; Merrill, 25, 265.
- copper deposits, Lindgren, 21, 332.
- Grand Canyon geology, Robinson, 24, 109; Noble, 29, 369, 497.
- minerals of, Blake, 28, 82.
- Arkansas**, diamonds of, 24, 275.
- Pleistocene bone deposit, 27, 93.
- Arlt, T.**, Entwicklung der Kontinente, 26, 512.
- Arnold, H. D.**, electric arc between metallic electrodes, 24, 383.
- Arnold, R.**, rocks from the Olympic Mts., Washington, 28, 9.
- Arrhenius, S.**, Immuno-Chemistry, 25, 81.
- Artbildung**, Probleme der, Plate, 25, 531.
- Ashley, R. H.**, dithionic acid and the dithionates, 22, 259.
- Ashman, G. C.**, radium emanation, 26, 119; preparation of urano-uranic oxide, 26, 521; radio-activity of thorium, 27, 65.
- Association**, American, meeting at Baltimore, 1909, 27, 100; Boston, 1909, 28, 566; Chicago, 1907, 24, 507; Hanover, 1908, 26, 100; Ithaca, 1906, 22, 92; New Orleans, 1906, 21, 188; New York City, 1907, 23, 76.
- British, meeting at Dublin, 1908, 26, 404; Sheffield, 1910,

30, 294; Winnipeg, 1909, 28, 412; York, 1906, 22, 352.

Astronomer's Wife, Hall, 27, 493.

Astronomical observatory, see **Observatory**.

— papers, Lehigh University, Ogburn, 24, 283.

Astronomy, Introduction to, Moulton, 22, 191; Laboratory, Wilson, 22, 191; Spherical, Ball, 27, 270; Newcomb, 22, 191.

Astrophysical Observatory, 25, 162, 431.

Atlantic preglacial deposits, Bowman, 22, 313.

Atmosphere, circulation, Bigelow, 29, 277.

— ionization of ocean, Eve, 23, 224.

— nucleation, Barus, 21, 400.

Atmospheric electricity, observations in, Dike, 27, 197.

— radio-activity, Dadourian, 25, 335.

Atomic weights, recalculation, Clarke, 30, 80. See also **CHEMISTRY**.

Auer burner, spectrum of, Rubens, 21, 172.

Austen, E. E., Blood-sucking Flies, British, 22, 476; African, 29, 92.

Australia, Western, geol. survey, see **GEOLOGICAL REPORTS**.

— meteorite from, Smith, 30, 264.

Austrian Society of Engineers, prizes, 28, 88.

Avogadro, Works of, 28, 87.

— and Dalton, Chemical Hypotheses, Meldrum, 22, 79.

B

Babbitt, J. B., Physical History of the Earth, 27, 91.

Bacon, N. T., phenomena in Crookes' tubes, 22, 310.

Bacterial Infections of Digestive Tract, Herter, 24, 91.

Bacteriology, Dairy, Russell and Hastings, 29, 200.

Baker, R. H., solar eclipse of 1907, 21, 245.

Ball, R., Astronomy, 27, 270.

Ball, S. H., pre-Cambrian rocks of Georgetown, Col., 21, 371.

Ballore, F. de M. de, les Tremblements de Terre, 21, 331; La Science Séismologique, 25, 262.

Bancroft, J. A., gedrite in Canada, 25, 509.

Banks, Sir Joseph, Maiden, 28, 566.

Barker, H. C., thermoelectromotive forces of potassium and sodium, 24, 159.

Barrell, J. B., geology of Marysville mining district, Montana, 24, 85; Mauch Chunk shale, 25, 353.

Barton, E. H., Text-book of Sound, 28, 77.

Barus, C., nucleation of the atmosphere, 21, 400.

— drop of pressure in fog chamber, 22, 81, 339; nuclei and ions in dust-free air, 22, 136; standardizing the coronas of cloudy condensation, 22, 342.

— Changes of colloidal nucleation, 23, 202; vapor nucleation in the lapse of time, 23, 342; decay of ions in fog chamber, 23, 460.

— method for observation of coronas, 24, 277, 376; cycles of coronas, 24, 309; decay of nuclei, 24, 419; volcanic activity, 24, 483.

— axial colors of steam jet and coronas, 25, 224; behavior of nuclei of pure water, 25, 409.

— standardization of the fog chamber, 26, 87; Thomson's constant, 26, 324.

— coronas with mercury light, 27, 73; absence of polarization in artificial fogs, 27, 402.

— use of the grating in interferometry, 30, 161.

Bascom, F., anhydrite twin from Aussee, 24, 487.

Bateson, W., Mendel's Principles of Heredity, 27, 491; 28, 84.

Bather, F. A., Botryocrinus, 22, 468.

Bauer, L. A., Magnetic Tables and Charts of the U. S., 27, 263.

Bauschinger, Bahnbestimmung der Himmelskörper, 21, 478.

Bayliss, W. B., Nature of Enzyme Action, 27, 100.

Becker, G. F., current theories of slaty cleavage, 24, 1.

- Bedell, F.**, Direct and Alternating Current Testing, **29**, 83.
- Beede, J. W.**, Upper Permian of Oklahoma, etc., **24**, 86; correlation of Guadalupian and Kansas sections, **30**, 131.
- Belgium**, caves in, Prinz, **30**, 91.
- Belknap Mountains**, petrography, Pirsson and Washington, **22**, 439, 493.
- Benton, J. R.**, strength and elasticity of spider thread, **24**, 75.
- Bergen, Norway**, glaciation, etc., Kolderup, **26**, 583.
- Bergen, J. Y.**, Botany, **23**, 155.
- Bering Sea** ice flows, diatomaceous dust on, Kindle, **28**, 175.
- Bermuda Islands**, Bibliography of literature, Cole, **25**, 159.
- Cahow from, Mowbray, **25**, 361; decapod crustacea, Verrill, **25**, 534; fishes, parasites of, Linton, **25**, 159.
- Geology and zoology, Verrill, **24**, 179, 180.
- Berry, E. W.**, *Prorosmarus allenii* from Virginia, **21**, 444; mid-Cretaceous species of *Torreya*, **25**, 382; Cretaceous *Bauhinia* from Alabama, **29**, 256; Pleistocene flora of Alabama, **29**, 387; Cretaceous *Lycopodium*, **30**, 275.
- Beyer, F. B.**, filtering crucible in electrolytic analysis, **25**, 249; electrolytic estimation of lead and manganese, **27**, 59.
- Bigelow, F. H.**, meteorological elements and solar radiation of the United States, **25**, 413; general circulation of the earth's atmosphere, **29**, 277; inversion of temperature amplitudes, **30**, 115.
- Binn, Valley of**, Desbuissons, **29**, 195.
- Biology, Elements**, Hunter, **24**, 448.
- of the Nineteenth Century, Braeunig, **25**, 362.
- Bi-quartz wedge plate**, Wright, **26**, 391.
- Birds**, interlocking of feathers in flight, Trowbridge, **21**, 145.
- of Chicago, Woodruff, **24**, 92.
- origin of, Pycraft, **22**, 547.
- See also **ZOOLOGY**.
- Birkeland, K.**, Norwegian Aurora Polar expedition, **29**, 272.
- Bishop, A. L.**, Physical and Commercial Geography, **30**, 158.
- Bitumens**, solid, Peckham, **29**, 459.
- Black Hills, Dakota**, geology and water resources, Darton, **29**, 267.
- Blackwelder, E.**, Research in China, **24**, 501; **25**, 349; Yakutat coastal plain of Alaska, **27**, 459.
- Blair, A. A.**, Chemical Analysis of Iron, **26**, 511.
- Blake, W. P.**, tourmaline of Crown Point, N. Y., **25**, 123; Minerals of Arizona, **28**, 82.
- obituary notice of, **30**, 95.
- Blodgett, M. E.**, stratigraphy of Mt. Taylor region, N. M., **25**, 53.
- Body, and Defences**, Jewett, **30**, 93.
- Böggild, Greenland** minerals, **23**, 320; sea-floor deposits of Greenland, **23**, 394.
- Boiling points**, see **Metals**.
- Bolometer**, vacuum, Warburg, Leithäuser and Johansen, **24**, 500.
- Boltwood, B. B.**, radio-activity of salts of radium, **21**, 409; radio-activity of thorium minerals and salts, **21**, 415.
- radium and uranium in radio-active minerals, **22**, 1; production of radium by actinium, **22**, 537.
- disintegration products of uranium, **23**, 77.
- radio-activity of thorium salts, **24**, 93; new radio-active element, **24**, 370.
- radio-activity of uranium minerals, **25**, 269; ionium, **25**, 365; life of radium, **25**, 493.
- International Congress of Radiology and Electricity, **30**, 415.
- Börnstein, R.**, Wetterkunde, **22**, 81.
- Bose, J. C.**, Plant response as a means of investigation, **21**, 476; **22**, 188; Electro-Physiology, **25**, 525.
- Bosler, J.**, Theories of the Sun, **30**, 295.
- Boston**, Cretaceous clays of, Clapp, **23**, 183.
- Society of Natural History, Guide to Invertebrate Collection, Sheldon, **21**, 336, 475.

- Bosworth, R. S.**, determination of silver as chromate, **27**, 241; iodometric estimation of silver, **27**, 302; **28**, 287; crystals of silver sulphate and dichromate, **29**, 293.
- Botanical Station**, Harvard, in Cuba, **27**, 94.
- BOTANY AND BOT. WORKS.**
- Agriculture of the Dutch East Indies, **27**, 192.
- Algenflora der Danziger Bucht, Lakowitz, **26**, 168.
- Algue Oxfordienne, Lignier, **23**, 240.
- Aneimites, seeds of, White, **23**, 237.
- Anemonella thalictroides, Holm, **24**, 243.
- Angiosperms, origin, Arber, **25**, 356.
- Araucariæ, Seward and Ford, **23**, 236.
- Autogamie bei Protisten, Hartmann, **28**, 506.
- Blütenpflanzen Afrikas, Thonner, **27**, 344.
- Botanist on the Amazon and Andes, Spruce and Wallace, **27**, 266.
- Botany, Gray's New Manual, Robinson and Fernald, **26**, 518.
- Laboratory, Clute, **29**, 272.
- Mechanical Problems, Schwendener and Holtermann, **27**, 345.
- Paleozoic, Scott, **23**, 235.
- Principles, Bergen and Davis, **23**, 155.
- Textbook, Campbell, **24**, 91; Kræmer, **26**, 586; Strasburger, Noll, Schenck and Karsten, **26**, 168.
- Brillenkaimane von Brasilien, Siebenrock, **23**, 240.
- Ceanothus Americanus, Holm, **22**, 523.
- Chlorophyl, crystallized, Willstätter and Benz, **25**, 520.
- on planets, **27**, 487.
- Clathropteris meniscoides, Nathorst, **23**, 239.
- Clearing and mounting agent, **27**, 96.
- Cycadaceæ, structure, Worsdell, **25**, 358.
- Cycadofilices, White, **23**, 237.
- BOTANY AND BOT. WORKS.**
- Cyperaceæ, studies in, Holm, No. XXV, **23**, 422; No. XXVI, **26**, 478.
- Desmidiaceæ, British, West, **21**, 477.
- Dicotyledons, Anatomy, Sollereder, **26**, 585.
- Dictyophyllum and Camptopteris, Nathorst, **23**, 238.
- Flora, Forest, of New South Wales, Maiden, **27**, 191, 418.
- fossile de l'Argonne, Fliche, **25**, 359.
- Origin of a Land, Bower, **26**, 167.
- See **GEOLOGY**.
- Florule Portlandienne, Fliche and Zeiller, **23**, 236.
- Flower Pollination, Knuth and Davis, **27**, 96.
- Fungi, of N. America, Index, Vol. I, pt. I, Farlow, **21**, 87.
- Gingko-like forms, Nathorst, **25**, 360.
- Gray Herbarium, publications, **28**, 85.
- Heather in Townsend, Mass., **22**, 190.
- Isopyrum biternatum, Holm, **25**, 133.
- Lepidostrobos foliaceus, Scott, **23**, 240.
- Lignite of Vermont, Tertiary, Perkins, **23**, 237.
- Mesozoic age, flowering plants of, Scott, **25**, 354.
- Microsporangia of Pteridospermeæ, Kidston, **23**, 238.
- Paleobotanische Mitteilungen, Nathorst, **25**, 356.
- Paleobotany of Long Island, Hollick, **23**, 236.
- Pflanzen, der Lichtgenuss der, Wiesner, **25**, 363.
- Pflanzen-anatomie, Physiologische, Haberlandt, **29**, 195.
- Pflanzen-Chromatophoren, Senn, **26**, 587.
- Pflanzenfabel in der Weltliteratur, Wünsche, **21**, 477.
- Pilze, Chemie der höheren, Zellner, **25**, 364.
- Pinus, cone growth, Wieland, **25**, 103.
- Plant Anatomy, Stevens, **25**, 363.
- Chemistry, studies in, and literary Papers, Michael, **24**, 90.

BOTANY AND BOT. WORKS.

- Plant remains in the Scottish peat mosses, Lewis, **25**, 358.
 — response as a means of physiological investigation, Bose, **21**, 476; **22**, 188.
 — Study, Meier, **27**, 345.
 — flowering, of the mesozoic age, Scott, **25**, 354.
 — Fossil, Seward, **30**, 356.
 Plants, Fungous Diseases of, Duggar, **30**, 92.
 — influence of climate on structure, Holtermann, **23**, 469.
 — manganese as fertilizer, **21**, 248.
 Pteridosperms and angiosperms, Oliver, **25**, 356.
 Rhizopoda, British freshwater, Cash and Hopkinson, **21**, 475.
 Seed, The, a chapter in Evolution, Oliver, **23**, 235.
 Sigillaria elegans, Kidston, **23**, 240.
 Sinnesorgane im Pflanzenreich, Haberlandt, **23**, 154.
 Sporophyl, morphogeny, Hallier, **25**, 355.
 Stauropteris oldhamia, germinating spores, Scott, **23**, 239.
 Stellaria, North American species, Holm, **25**, 315.
 Sutcliffia insignis, Scott, **23**, 237.
 Taxoideæ, Robertson, **25**, 360.
 Technical Products, Microscopy, Hanausek and Winton, **25**, 87.
 Torreya, mid-Cretaceous species, Berry, **25**, 382.
 Trees, Ward, **27**, 491.
 Trias und Jurapflanzen von der Insel Kotelny, Nathorst, **25**, 360.
 Tubicula sutcliffii, Stopes, **23**, 240.
 Végétaux fossiles, Zeiller, **25**, 357; Marty, **25**, 358; de Normandie, Lignier, **25**, 360.
 Zamites and pterophyllum, Arber, **25**, 360.
 Zoocécidies des Plantes d'Europe, Houard, **28**, 506.
Bourne, A. N. and E. G., Champlain's Voyages, **22**, 550.
Bower, F. O., Origin of a Land Flora, **26**, 167.
Boulders, fractured, in conglomerate, Campbell, **22**, 231.
Bowles, O., pyromorphite from British Columbia, **28**, 40.
Bowman, L., Atlantic preglacial deposits, **22**, 313; physiography of the Central Andes, **28**, 197, 373.
Bradley, W. M., precipitates on asbestos, **21**, 453; composition of warwickite, **27**, 179; analysis of neptunite, California, **28**, 15; labradorite, **30**, 151.
Braintree Cambrian, Shimer, **24**, 176.
Branner, J. C., Bibliography of Clays and the Ceramic Arts, **22**, 545.
 — geology of the Serra do Mulato, Brazil, **30**, 256; Tombador escarpment in Bahia, Brazil, **30**, 335; geology of the Serra de Jacobina, Brazil, **30**, 385.
Brazil, faceted pebbles of, Lisboa, **23**, 9, 150.
 — Geological survey, Derby, **23**, 308.
 — manganese deposits, Derby, **25**, 213.
 — papers on geology of, Branner, **30**, 256, 335, 385.
 — Shaler expedition, **26**, 404.
Breeding, Davenport, **25**, 362.
Breger, C. L., on Eo Devonaria, **22**, 534.
Brigham, W. T., Hawaiian Volcanoes, **29**, 363.
British Guiana, Gold Fields of, Harrison, **27**, 409.
 — New Guinea, geological features, Maitland, **21**, 404.
British Museum catalogues, Bryozoa, Gregory, **29**, 195; Glossopteris flora, Arber, **21**, 474; Homoptera, Distant, **22**, 476; Hymenoptera, Morley, **30**, 94; Lepidoptera Phalaenæ, Hampson, **23**, 321; **27**, 492; **28**, 507; **30**, 94; Madreporian corals, Bernard, **21**, 474; **23**, 321; Orthoptera, Kirby, **23**, 321; **30**, 93.
 — History of the Collections, **23**, 321.
Brögger, W. C., minerals of Southern Norway, **24**, 282.
Brooklyn Institute, Science bulletins, **21**, 480; **23**, 76, 398; **25**, 533; **28**, 87, 565; **30**, 94; monograph, **27**, 420.
Brooks, W. R., The Oyster, **21**, 88.

- Brown, E. W.**, effect of magnetic and other forces on the motion of the moon, **29**, 529.
- Brown, J.**, interaction of hydrochloric acid and potassium permanganate, **21**, 41.
- Brown, T. C.**, development of *Streptelasma rectum*, **23**, 277.
- Browning, P. E.**, separation of magnesium, **23**, 293; detection of ferrocyanides, etc., **23**, 448; estimation of cerium, **26**, 83; Rarer Elements, **27**, 262; estimation of thallium, **27**, 379; precipitation of tellurium dioxide, **28**, 112; complexity of tellurium, **28**, 347; separation of cerium, **29**, 45; estimation of vanadium as silver vanadate, **30**, 220.
- Brückner, E.**, die Alpen im Eiszeitalter, **25**, 84; **27**, 341.
- Buchanan, J. Y.**, determination of specific gravity of soluble salts, **21**, 25.
- Buffalo** quadrangle, geologic map, Luther, **22**, 347.
- Building stones**, of North Carolina, Watson and Laney, **23**, 70.
- Bumstead, H. A.**, heating effects of Röntgen rays in different metals, **21**, 1; scientific papers of J. Willard Gibbs, **23**, 144; heating effect of Röntgen rays in lead and zinc, **25**, 299; Lorentz-FitzGerald hypothesis, **26**, 493.
- Burbank, J. E.**, apparent variations of the vertical, **30**, 323.
- Bureau of Mines**, **30**, 292, 419.
- Burma**, lower Paleozoic fossils, Reed, **25**, 262.
- Buschman, J. O. F.**, das Salz, etc., **28**, 83.
- Bush, K. J.**, tubicolous annelids, **23**, 52, 131; notes on the family Pyramidellidæ, **27**, 475.
- Butler, B. S.**, pyrogenetic epidote, **28**, 27.
- Butler, G. M.**, Handbook of Minerals, **26**, 167.
- Calcium** metasilicate, polymorphic forms, Allen and White, **21**, 89; **27**, 1.
- California** earthquake of 1906, **22**, 82; **27**, 48; **30**, 287.
- exploration of Samwel Cave, Furlong, **22**, 235.
- Miocene foraminifera, Bagg, **21**, 253.
- Pectens of, Arnold, **22**, 188.
- Santa Clara Valley, geology, Crandall, **24**, 33.
- Cambrian**, see **GEOLOGY**.
- Cambridge** Natural History, Harmer and Shipley, **29**, 92.
- Camel**, fossil, Nebraska, Loomis, **29**, 297.
- Cameron, A. T.**, Radiochemistry, **30**, 82.
- Campbell, D. H.**, Textbook of Botany, **24**, 91.
- Campbell, M. R.**, fractured bowlders in conglomerate, **22**, 231.
- Canada** balsam, refractive index, Schaller, **29**, 324.
- Dept. of Mines, **30**, 357.
- geol. survey, see **GEOLOGICAL REPORTS**.
- Canada's** Fertile Northland, Chambers, **26**, 520.
- Canadian** glaciers, Scherzer, **25**, 261.
- Canal rays**, Paschen, J. J. Thomson, etc., **24**, 441; Doppler effect in, Stark and Stenberg, **27**, 405; mechanical working, Swinton, **25**, 348; phosphorescence by, Trowbridge, **25**, 41; spectral intensity, Stark and Stenberg, **27**, 84.
- Canfield, F. A.**, mineralogical notes, **23**, 20; mosesite, new mineral from Texas, **30**, 202.
- Canyon** Diablo, see **Arizona**.
- Grand, see **Grand**.
- Cape Colony**, plains in, Schwarz, **24**, 185.
- Cape of Good Hope**, geol. map, **23**, 465; **25**, 83; **26**, 98.
- geol. survey, see **GEOLOGICAL REPORTS**.
- Carnegie** Foundation, annual reports, first, **23**, 244; second, **25**, 164; third, **27**, 346; fourth, **29**, 274; Bulletin, No. 4, **30**, 94.
- Institution of Washington, publications, **21**, 480; **22**, 94, 352; **23**, 75, 243; **24**, 87, 382; **26**, 99.

C

Cady, W. G., electric arc between metallic electrodes, **24**, 383; **28**, 89, 239.

- 519; 27, 347; 28, 564; 29, 368; 30, 95, 295.
- Carnegie** Institution Year Book, No. 4, 1905, 21, 258; No. 5, 23, 156; No. 6, 25, 162; No. 7, 27, 267; No. 8, 29, 274.
- Carney, F.**, wave-cut terraces in Keuka Valley, 23, 325; form of outwash drift, 23, 336; glacial overflow channels in New York, 25, 217.
- Catalonia**, volcanoes and rocks, Washington, 24, 217; Calderon, Cazorro and Fernandez-Navarro, 24, 282.
- Cathode rays**, ionization by, Herweg, 21, 327.
- — magnetic effect, Klupathy, 25, 258.
- — relation to exciting Röntgen rays, Bestelmeyer, 23, 384.
- — secondary, Kleeman, 24, 499.
- Cave**, Samwel, exploration, Furlong, 22, 235.
- vertebrates, Eigenmann, 29, 270.
- work on, von Knebel, 21, 473.
- Caves** in Belgium, Prinz, 30, 91.
- Cement** resources of Virginia, Bassler, 30, 157.
- Centroepigenesis**, Rignano, 23, 468.
- Ceylon**, minerals of, Coomaraswamy, 21, 186; Parsons, 28, 81.
- Chamberlin, T. C.**, Geology, 21, 400; tidal phenomena, 28, 188.
- Chambers, G. F.**, Story of the Comets, 28, 565; Halley's Comet, 30, 154.
- Champlain** and Hudson Valleys, water levels, Woodworth, 22, 86.
- Champlain's Voyages**, translated by E. G. and A. N. Bourne, 22, 549.
- Chase, F. L.**, parallax investigation of 162 stars, 22, 471.
- CHEMICAL WORKS.**
- Analyse Volumétrique, Duparc and Basadonna, 29, 458.
- Analysis, Qualitative, Duparc and Monnier, 25, 80; McGregory, 28, 554; Morgan, 23, 62; Sellers, 28, 554; Tower, 27, 486.
- Quantitative, Clowes and Coleman, 29, 80; Gilman, 25, 450.

CHEMICAL WORKS.

- Chemical Abstracts, 23, 223.
- Chemie, Lehrbuch der Allgemeinen, Ostwald, 22, 460.
- Physikalische, Höber, 23, 158.
- Chemische Physiologie, Beiträge, Hofmeister, 22, 540.
- Chemistry, Analytical, Chesneau, translated by Lincoln and Carnahan, 29, 458; Treadwell and Hall, 30, 348.
- Conversations on, Ostwald, 21, 248.
- Elementary modern, Ostwald and Morse, 28, 495.
- Essentials, Williams, 30, 347.
- Exercises in, McPherson and Henderson, 23, 384.
- History, Armitage, 23, 62; Bauer, 25, 81; Ladenburg, 23, 306; Von Meyer, 23, 62.
- Industrial, Thorp, 23, 460.
- Inorganic, A. Smith, 22, 345.
- Metallurgical, Stansbie, 23, 383.
- Organic, Cohen, 25, 146; Noyes, 25, 80; 30, 348; Stewart, 27, 337.
- Outlines, Fenton, 28, 554; Kahlenberg, 28, 494.
- Physical, Ewell, 28, 555; Getman, 25, 450; Jones, 24, 440; 29, 264.
- Physiological, Long, 28, 555.
- Practical, Martin, 24, 440.
- Principles, Ostwald, 28, 495.
- Progress for 1904, Annual Report, 21, 80.
- Elements and Compounds, Affinities of, Martin, 21, 79.
- Rarer, Browning, 27, 262.
- CHEMISTRY.**
- Acetamide, preparation, Phelps, 24, 429.
- Acetone, Jolles, 22, 79.
- Acetylene, thermal constants, Mixer, 22, 13.
- Acidimetry, alkalimetry, standards in, Phelps and Weed, 26, 138, 143.
- Actinium, activity, Boltwood, 25, 291.
- Alcohol, ethyl, manufacture from sawdust, Classen, 30, 287.
- — preparation of pure, Winkler, 22, 458.

CHEMISTRY.

- Alkaline metals, boiling points of, Ruff and Johannsen, **21**, 78; hydrides of, Moissan, **21**, 77.
- Alumina, iodometric determination of basic, Moody, **22**, 483.
- with silica, etc., binary systems of, Shepherd and Rankin, **28**, 293; optical study, Wright, **28**, 315.
- Aluminium electrodes, gas from, Hirsch and Soddy, **25**, 148.
- Ammonia, action upon ethyl oxalate, Phelps, Weed and Housum, **24**, 479.
- from the eruption of Vesuvius, Stoklasa, **22**, 540.
- liquid, as a solvent, Bronn, **21**, 79.
- oxidation of, Schmidt and Böcker, **22**, 78.
- Ammonium molybdate, hydrolysis, Moody, **25**, 76.
- salts, hydrolysis, Moody, **22**, 379.
- sulphate, decomposition, Delépine, **21**, 247.
- Antimony, modifications, Stock and Siebert, **21**, 170.
- and tin, separation, Czerwek, **22**, 460; Fischer and Thiele, **30**, 286; Panojotow, **28**, 75; Plato, **30**, 347.
- Argon, compound of, Fischer and Iliovici, **27**, 82; preparation, Fischer and Ringe, **26**, 511.
- and helium from malacone, Kitchen and Winterson, **23**, 141.
- Arsenic, determination, Andrews and Farr, **27**, 316; Palmer, **29**, 399.
- separation from copper, Gooch and Phelps, **22**, 488.
- trisulphide, reduction, Ehrenfeld, **25**, 79.
- and antimony determination, Heath, **25**, 513.
- Asbestos, precipitates on, Penfield and Bradley, **21**, 453.
- Atomic weights, new periodic function, Viktor, **27**, 186; recalculation, Clarke, **30**, 80; speculations in regard to, Collins, **24**, 496.
- Barium, determination, in rocks, Langley, **26**, 123.

CHEMISTRY.

- Barium suboxide, Guntz, **22**, 344.
- Benzoic acid, esterification, Phelps and Osborne, **25**, 39.
- Beryllium, estimation, Parsons and Barnes, **23**, 383.
- formates, Tantar, **30**, 80.
- and aluminium, separation, Glassmann, **22**, 539.
- Bismuth, determination, Staehler and Schaffenberg, **21**, 171.
- Boron, determination, Copaux and Boiteau, **27**, 404.
- Bromides of barium and radium, relative volatility, Stock and Heynemann, **29**, 79.
- Bromine fluoride, Lebeau, **21**, 172.
- free, determination, Perkins, **29**, 338.
- Cadmium amalgams, Smith, **29**, 264.
- Cæsium chromates, Fraprie, **21**, 309.
- Calcium as an absorbent, Soddy, **23**, 304.
- hydride, gaseous in acetylene, **21**, 464; preparation of, Jaubert, **21**, 464.
- metasilicate, polymorphic forms, Allen and White, **21**, 89.
- salts, complex, d'Ans, **26**, 399.
- and magnesium metasilicates, relations, Allen and White, **27**, 1.
- Carbon, action of oxygen, etc., upon, Farup, **22**, 344.
- fusion in the singing arc, La Rosa, **28**, 555.
- monosulphide, Dewar and Jones, **30**, 285.
- oxybromide, von Bartel, **21**, 463.
- suboxide, Diels and Wolf, **21**, 396.
- tetrachloride, action of, Camboulives, **30**, 286.
- Carbonates, action of, Gutmann, **25**, 449.
- Cerium, determination, Dietrich, **27**, 260; Browning and Palmer, **26**, 83; separation, Browning and Roberts, **29**, 45.
- Chlorates, volumetric method for, Knecht, **26**, 91.
- Chlorides, potassium-lead, Lorenz and Ruckstuhl, **22**, 540.

CHEMISTRY.

- Chlorine, determination, Gooch and Read, **28**, 544.
 Chromic and vanadic acids, estimation, Edgar, **26**, 333.
 Chromium, estimation of, Gooch and Weed, **26**, 85; new variety of, Jassonneix, **24**, 81; thermal constants, Mixter, **26**, 131.
 Cobalt with carbon monoxide, Hirtz and Cowap, **26**, 575.
 — and nickel, heat of formation of oxides of, Mixter, **30**, 193.
 Cobalti-nitrite method, Drushel, **26**, 329.
 Colloidal solutions, formation from metals, Svedberg, **29**, 187.
 Columbium and tantalum, Foote and Langley, **30**, 393, 401.
 Copper, determination, Gooch and Heath, **24**, 65.
 — metallic, behavior toward gases, Sieverts and Krumbhaar, **30**, 412.
 — volumetric method for, Jamieson, **26**, 92.
 — oxalate in analysis, Gooch and Ward, **27**, 448.
 Crystallization, explosive, Weston, **27**, 82.
 Cupric chloride, gases evolved by action on steel, Goutal, **27**, 485.
 Cuprous sulphate, Recoura, **28**, 74.
 Cyanogen, synthesis of, Wallis, **21**, 464.
 Dithionic acid, analysis, Ashley, **22**, 259.
 Dye, purple, of the ancients, Friedländer, **29**, 262.
 Esters, esterification, etc., Phelps, Tillotson, Eddy, Palmer, Smillie, **26**, 243, 253, 257, 264, 267, 275, 281, 290, 296.
 — of halogen substituted acids, Drushel and Hill, **30**, 72.
 Ferric chloride in the zinc reductor, Randall, **21**, 128.
 Ferrocyanides, Browning and Palmer, **23**, 448.
 Ferrous salts, compounds with nitric oxide, **23**, 222.
 Fluorides, interference with precipitations of alumina, Hinrichsen, **24**, 79.

CHEMISTRY.

- Fluorine, estimation iodometrically, Hileman, **22**, 383.
 Formamide, preparation, Phelps and Deming, **24**, 173.
 Gas mixtures, explosion limits of certain, Teclu, **23**, 459.
 Gold, colorimetric determination, Maxson, **21**, 270; distillation, Moissan, **21**, 171; solubility in hydrochloric acid, Awerkiew, **27**, 261.
 Grape sugar, determination, **21**, 325.
 Halogen compounds, combustion of, Robinson, **22**, 345.
 Halogens in benzol derivatives, use of metallic potassium, Maryott, **30**, 378.
 — in organic compounds, determination, Chablay, **23**, 305; Stepanow, **23**, 142; Vaubel and Schauer, **21**, 396.
 Helium, gas containing, Cody and McFarland, **24**, 497; Erdmann, **29**, 549.
 — liquefaction, Ounes, **30**, 413.
 — preparation, Jacquerod and Perrot, **23**, 304.
 — production from radium, Dewar, **26**, 575; from uranium, Soddy, **27**, 262.
 — and thorium, Strutt, **25**, 146.
 Hydrates in aqueous solution, Jones, **23**, 305.
 Hydriodic acid, rapid preparation, Bodroux, **21**, 326.
 Hydrocarbons, decomposition of gaseous, Kusnetzow, **24**, 374.
 Hydrochloric acid, decomposition, Gooch and Gates, **28**, 435.
 — — and potassium permanganate, interaction, Brown, **21**, 41.
 Hydrogen, determination of, Paal and Hartmann, **29**, 458.
 — antimonide, action upon dilute silver solutions, Reckleben, **28**, 74.
 — chloride, action of light upon, Coehn and Wassiljew, **29**, 79.
 — phosphide, Matignon and Trahnoy, **27**, 337.
 — silicides, Lebeau, **27**, 404.

CHEMISTRY.

Iodides and free iodine, determination, Bugarsky and Hovrath, **28**, 408.

— and iodates, Moody, **22**, 379.

Iodimetry, standards in, **26**, 143.

Iodine, determination of free, Gooch and Perkins, **28**, 33.

Ionium, see **Ionium**.

Iron in copper alloys, Gregory, **25**, 449.

— detection of small quantities, Mouneyrat, **22**, 79.

— estimation of, Gooch and Newton, **23**, 365; Newton, **25**, 343.

— group, distillation of metals, Moissan, **21**, 397.

— hydrolysis of salts of, Moody, **22**, 76.

— rusting of, **21**, 78.

— and copper, quantitative reagent, Biltz and Hödtke, **30**, 79.

— and vanadium, estimation, Edgar, **26**, 79.

Iron-cyanogen compounds, cause of color, **21**, 78.

Lanthanum, estimation, Drushel, **24**, 197.

Lead, electrolytic estimation, Gooch and Beyer, **27**, 59.

— and silver compounds, heat of formation, Colson, **28**, 76.

Lithium in radio-active minerals, McCoy, **25**, 346.

Lutecium, Urbain, **25**, 146.

Magnesium metasilicate, **22**, 385.

— separation, Browning and Drushel, **23**, 293; Gooch and Eddy, **25**, 444.

Malonic acid, esterification, Phelps and Tillotson, **26**, 243, 257, 267.

Manganese, electrolytic estimation, Gooch and Beyer, **27**, 59.

— as a fertilizer for plants, Bertrand, **21**, 248.

— higher oxides of, Meyer and Rötgers, **25**, 257.

— magnetic compounds with boron, Wadekind, **24**, 80.

— and cobalt, atomic weight, Baxter and Hines, **23**, 383.

— and the periodic law, Reynolds, **25**, 256.

Mercuric chloride, double salts, Foote and Levy, **22**, 458.

CHEMISTRY.

Mercury peroxide, Von Antropoff, **25**, 520.

Mesothorium, Hahn, **24**, 79.

Metals, action on fused caustic soda, LeBlanc and Bergmann, **29**, 361.

— and dissolved halogens, velocities of reactions, Van Name and Edgar, **29**, 237.

Meteoric alloys, structure of, Guertler, **30**, 413.

Methyl alcohol, detection, Deniges, **29**, 550.

Molybdenum, etc., formation of the oxides, Mixter, **29**, 488.

— preparation of fused, Biltz and Gärtner, **22**, 540.

Molybdic acid, behavior, Randall, **24**, 313.

Niobium, Schulze, **25**, 452; and tantalum, separation, Warren, **22**, 520; see **Columbium**.

Nitric oxide, thermal formation, Fischer and Marx, **22**, 344.

Nitrogen, oxidization of, Warburg and Leithäuser, **22**, 462.

— properties of liquid, Erdmann, **22**, 78.

— trioxide, Baker, **25**, 145.

— utilization of atmospheric, Frank, **26**, 509.

Nitrous and nitric acids, determination, Weisenheimer and Heim, **21**, 170.

Organic substances, mechanical separation, Bordas and Tourplain, **21**, 398.

Ozone, see **Ozone**.

Petroleum, crude, diffusion through Fuller's earth, **30**, 412.

Phosphorescent elements, Urbain, **25**, 256.

Phosphorus, organic compounds, Berthaud, **23**, 459.

— in phosphor tin, Gemmell and Archbutt, **26**, 399.

— white, Llewellyn, **25**, 257.

Percarbonates, Wolfenstein and Peltner, **25**, 450.

Platinum amalgam, Moissan, **23**, 459.

— group, boiling of metals of, Moissan, **21**, 325.

— wire, substitute for, Kirby, **29**, 551.

Polonium, see **Polonium**.

Polyiodides of potassium, etc., Foote and Chalker, **26**, 92.

CHEMISTRY.

- Potassium aluminium sulphate, Gooch and Osborne, **24**, 167.
- atomic weight, Richards and Staehler, **23**, 61.
- as the cobalti-nitrite, Drushel, **24**, 433.
- estimation in animal fluids, Drushel, **26**, 555.
- ferricyanide in alkaline solutions, Palmer, **30**, 141; in estimation of arsenic, etc., Palmer, **29**, 399.
- percarbonate, Riesenfeld and Reinhold, **29**, 188.
- salts, radiation, Henriot, **27**, 486.
- Prussian blue, Müller and Stanisch, **27**, 403.
- Radium, see **Radium**.
- Salts, titration of mercurous, Randall, **23**, 137.
- Selenious acid, volumetric determination, Marino, **29**, 189.
- Selenium, electric properties, Ries, **27**, 338.
- Silicon fluoride, alkalimetric estimation, Hileman, **22**, 329.
- fluoroform, Ruff and Albert, **21**, 247.
- and silicon carbide, combustion, Mixter, **24**, 130.
- Silver, detection of minute quantities, Whitby, **30**, 79.
- determination as chromate, Gooch and Bosworth, **27**, 241.
- electro chemical equivalent, Van Dijk, **21**, 326.
- use in determination of molybdenum, etc., Perkins, **29**, 540.
- iodometric determination of, Bosworth, **28**, 287; Gooch and Bosworth, **27**, 302.
- nitrogen, etc., atomic weight, Richards and Forbes, **24**, 439.
- sulphate and dichromate, crystals, Van Name and Bosworth, **29**, 293.
- vapor, molecular weight, Wartenberg, **21**, 463.
- Sodium alum, Smith, **28**, 553.
- cæsium, etc., detection, Ball, **29**, 360.
- hypobromite, use of, Pozzi-Escott, **29**, 551.
- and potassium, liquid alloys, Jaubert, **27**, 260.

CHEMISTRY.

- Solid substances, vaporization of, Zenghelis, **23**, 61.
- Succinic acid, use of, Phelps and Hubbard, **23**, 211; esterification, Phelps and Hubbard, **23**, 368.
- Sulphates, determination, Mitchell and Smith, **29**, 361.
- Sulphur, determination, Berger, **23**, 221; Hintz and Weber, **21**, 324.
- vapor-tension, Gruener, **24**, 497.
- Sulphuric acid, purification by freezing, Morancé, **28**, 75.
- Tantalum, atomic weight, Hinrichsen and Sahlbom, **22**, 459; see **Columbium** and **Niobium**.
- Tellurium, atomic weight, Baker and Bennett, **25**, 146.
- complexity of, Browning and Flint, **28**, 347; Flint, **30**, 209.
- separation, Brauner and Kuzma, **24**, 373.
- dioxide, Browning and Flint, **28**, 112.
- Tellurous and telluric acids, Berg, **21**, 248.
- Thallium, estimation, Browning and Palmer, **27**, 379.
- Thorianite, new element in, Evans, **25**, 521.
- Thorium, see **Thorium**.
- Tin, heat of oxidation, Mixter, **27**, 229.
- “Tin infection,” von Hasslinger, **27**, 83.
- Titanium, volumetric estimation of, Newton, **25**, 130.
- niobium, etc., separation, Weiss and Landecker, **28**, 493.
- oxide, heat of formation, Mixter, **27**, 393.
- solutions, peroxidized, Merwin, **28**, 119.
- tetrachloride, Vigouroux and Arrivant, **23**, 382.
- trichloride, Knecht and Hibbert, **25**, 80.
- Trisodium orthophosphate, etc., Mixter, **28**, 103.
- Tungstic and silicic oxides, separation, Defacqz, **27**, 186.
- Uranium, see **Uranium**, also **Radio-activity**, **Radium**.
- silicide, Defacqz, **27**, 186.
- Urano-uranic oxide, McCoy, **26**, 521.

CHEMISTRY.

- Vanadic acid, iodometric estimation, Edgar, **27**, 174.
 — reduction, Gooch and Edgar, **25**, 233.
 — and molybdic acid, determination, Edgar, **25**, 332.
 Vanadium and arsenic acids, estimation, Edgar, **27**, 299.
 — and chromium, estimation, Palmer, **30**, 141.
 — as silver vanadate, estimation, Browning and Palmer, **30**, 220.
 Vapor densities, determination, Blackman, **26**, 400.
 Weight, change of, in reactions, Landolt, **27**, 185.
 Ytterbium, constituents, von Welsbach, **27**, 83.
 Zinc, detection of, Bertrand and Javillier, **23**, 222.
 — chloride, use of, Phelps, **24**, 194.
 Zirconium, metallic, Weiss and Neumann, **29**, 457.
 — and thorium, oxy-sulphides, Hauser, **23**, 382.
- Chesneau, M. G.**, Analytical Chemistry, **29**, 458.
- Chicago**, birds of, Woodruff, **24**, 92.
- Chili**, copper minerals from Collahurasi, Ford, **30**, 16.
- China**, Cambrian faunas, Walcott, **22**, 188.
 — Research in, Blackwelder, **24**, 501; Willis, Blackwelder and Sargent, **25**, 349.
- Chlorophyll** on planets, existence, Umow, **27**, 487.
- Chwolson, O. D.**, Lehrbuch der Physik, **21**, 174.
- Cirkel, F.**, asbestos in Canada, **21**, 255; mica, **21**, 405.
- Civilization**, Physical Basis, Heine-
 man, **26**, 241.
- Clapp, F. G.**, Cretaceous clay at Boston, **23**, 183.
- Clark, A. H.**, origin of crinoidal muscular articulations, **29**, 40; pentamerous symmetry of crinoidea, **29**, 353.
- Clark, H. L.**, apodous holothurians, **26**, 100.
- Clark, W. B.**, Maryland geological survey, etc., **30**, 423, 430.
- Clarke, F. W.**, Data of Geochemistry, **25**, 458; Recalculation of Atomic Weights, **30**, 80.
- Clarke, J. M.**, Devonian history of New York, **26**, 93.
- Clay-Working Industry** in the U. S., Ries and Leighton, **28**, 563.
- Clays**, Ries, **23**, 71.
 — and Ceramic Arts, Bibliography, Branner, **22**, 545.
- Cleavage**, current theories of slaty, Becker, **24**, 1.
- Clement, J. K.**, formation of minerals of composition $MgSiO_3$, **22**, 385; water in tremolite, etc., **26**, 101; new measurements with gas thermometer, **26**, 405.
- Clowes**, Chemical Analysis, **29**, 80.
- Clute, W. N.**, Botany, **29**, 272.
- Coal**, production in 1908, Parker, **28**, 500.
 — and coal-mining, geology, Gibson, **27**, 91.
 — in Wyoming, **21**, 473.
- Coast Survey**, United States, magnetic reports, **23**, 243; **27**, 263; **28**, 86.
 — report for 1905, **21**, 259; 1906, **23**, 74; 1907, **25**, 459; 1908, **27**, 348; 1909, **29**, 559.
- Cockerell, T. D. A.**, on Tertiary insects, **23**, 285; **25**, 51, 227, 309; **26**, 69; **27**, 53, 381; **28**, 283.
 — on Tertiary plants, **26**, 65, 537; **28**, 447; **29**, 76.
- Cohen, J. B.**, Organic Chemistry, **25**, 146.
- Coherer**, electrolytic, Gundry, **21**, 326.
- Coherers**, Eccles, **30**, 81.
- Coker, E. G.**, elastic constants of rocks, **22**, 95; the flow of marble, **29**, 465.
- Cole, G. W.**, Bermuda Bibliography, **25**, 159.
- Coleman, A. P.**, Lower Huronian ice age, **23**, 187.
- Coleman**, Chemical Analysis, **29**, 80.
- Colloidal solutions**, electrically prepared, Burton, **21**, 399.
- Colorado**, Artesian waters, Head-
 den, **27**, 305.
 — Cripple Creek gold deposits, **23**, 466.
 — Florissant fossil insects, **25**, 52, 227; **26**, 69, 76; **27**, 53, 381; **28**,

- 126, 283, 533; **29**, 47; plants, **26**, 65, 537; **28**, 447; **29**, 76.
- Colorado**, geol. survey, see **GEOLOGICAL REPORTS**.
- geology of the Grayback mining district, **30**, 423; Monarch mining district, Crawford, **30**, 423.
- Georgetown, pre-Cambrian rocks, Ball, **21**, 371.
- red beds of southwestern, Cross and Howe, **21**, 328.
- Colors**, axial, of steam jet and coronas, Barus, **25**, 224.
- Columbia**, meteorites from, Ward, **23**, 1.
- Combustion**, see **Heat**.
- Comet**, Halley's, Chambers, **30**, 154.
- Comets**, Story of, Chambers, **28**, 565.
- Compressibility** of rocks, Adams and Coker, **22**, 95.
- Condenser** sparks, energy, duration, etc., Heydweiller, **21**, 465.
- Conductivity**, see **Electric**.
- Conglomerates**, desiccation, in Ohio, Hyde, **25**, 400.
- Congress**, report of Librarian, see **Library**.
- Connecticut**, Catalogue of Plants and Ferns, **29**, 559.
- geological map, Gregory and Robinson, **23**, 392.
- geological survey, see **GEOLOGICAL REPORTS**.
- geology, Rice and Gregory, **23**, 385.
- "Container,"** new form for Museums, Goodale, **21**, 451.
- Continents**, origin, etc., **26**, 238, 512.
- Cook, C. W.**, datolite from Westfield, Mass., **22**, 21; iodyrite from Tonopah and Broken Hill, **27**, 210.
- Cook, H. J.**, New Proboscidean from Nebraska, **28**, 183; Pliocene fauna from Nebraska, **28**, 500.
- Cooksey, C. D.**, corpuscular rays produced in metals by Röntgen rays, **24**, 285.
- Coon Butte**, see **Arizona**.
- Copper** deposits, Arizona, **21**, 332; Missouri, **21**, 180; Nevada, **22**, 467.
- Coral reef** origin and glaciation. Daly, **30**, 297.
- Corals**, Madreporian in British Museum, Bernard, **21**, 474; of Amboina, Bedot, **25**, 158; of Hawaii, Vaughan, **25**, 158.
- Paleozoic, early stages, Gordon, **21**, 109.
- Rugosa, origin of septa, Duerden and Carruthers, **23**, 315; Brown, **23**, 277.
- Cordoba**, la Sierre de, geology, Bodenbender, **22**, 88.
- Coronal** streamers, Trowbridge, **21**, 189.
- Coronas** of cloudy condensation, Barus, **22**, 342; cycles of, Barus, **24**, 309; with mercury light, Barus, **27**, 73; observation of, Barus, **24**, 277, 376.
- Crandall, R.**, Cretaceous of Santa Clara Valley, California, **24**, 33.
- Crawford, C. M.**, Physics, **25**, 258.
- Crew, H.**, Principles of Mechanics, **26**, 580; Elements of Physics, **29**, 83.
- Crinoids**, muscular articulations, Clark, **29**, 40; pentamerous symmetry, Clark, **29**, 353.
- Cripple Creek** gold deposits, Lindgren and Ransome, **23**, 466.
- Crookes' tubes**, phenomena in, Bacon, **22**, 310.
- Cross, W.**, red beds of southwestern Colorado, **21**, 328.
- Crystallization**, explosive, **27**, 82.
- Crystallography**, Wadsworth, **30**, 89.
- Chemical, Groth, **22**, 89; **23**, 153; **27**, 265.
- Geometrical, Sommerfeldt, **22**, 89.
- Physical, Groth, **21**, 185; **24**, 381.
- Crystals**, drawing of, Penfield, **21**, 206; Reeks and Evans, **26**, 584.
- in light parallel to an optic axis, Travis, **29**, 427.
- Cuba**, Harvard Botanical Station, **21**, 475; **27**, 94.
- naphtha from, Richardson and Mackenzie, **29**, 439.
- Culler, J. A.**, Physics, **28**, 557.
- Cumberland Gap** coal field, Kentucky, Ashley and Glenn, **22**, 187.
- Cummings, E. R.**, Paleontology, **30**, 355.
- Curie**, new unit, **30**, 416.
- Current Testing**, Bedell, **29**, 83.

Cyanide Processes, Wilson, 26, 576.

Cycads, historic, Wieland, 25, 93; Mesozoic, 21, 175; structure of, Worsdell, 25, 358.

D

Dadourian, H. M., radio-activity of thorium, 21, 427; atmospheric radio-activity, 25, 335.

Dahlgren, W., Animal Histology, 27, 97.

Dahomey, Mission Scientifique, Hubert, 26, 515.

Dale, T. N., Cambrian conglomerate of Ripton, Vermont, 30, 267.

Dall, W. H., Pliocene climatic conditions at Nome, Alaska, 23, 457.

Daly, R. A., abyssal igneous injection and mountain building, 22, 195; limeless ocean of Pre-Cambrian time, 23, 93, 393; mechanics of igneous intrusion, 26, 17; Pleistocene glaciation and the coral reef problem, 30, 297.

Dana, E. S., Second Appendix to the System of Mineralogy, 28, 196.

Darwin celebration at Cambridge, 25, 460.

— and Modern Science, Seward, 28, 505.

Davis, B. M., Botany, 23, 155.

Davis, W. A., Allen's Commercial Organic Analyses, 29, 263.

Davis, W. M., Physical Geography, 26, 591.

Davison, J. M., analysis of Estacado meteorite, 22, 59.

Day, A. L., lime-silica series of minerals, formation, 22, 265; new measurements with gas thermometer, 26, 405; nitrogen thermometer from zinc to palladium, 29, 93.

Declination instrument, new, Hutchins, 28, 260.

DeLury, J. S., cobaltite in northern Ontario, 21, 275.

Deming, C. D., preparation of formamide, 24, 173.

Derby, O. A., Brazil geol. survey, 23, 308; manganese deposits of Brazil, 25, 213.

Dew-ponds, Martin, 24, 509.

Diamond pipes in South Africa, Harger, 21, 471.

— from Arkansas, 24, 275; from Southwest Africa, 27, 489.

Diatomaceous dust on ice floes, Kindle, 28, 175.

Dielectrics, anomalies of, Schweidler, 25, 147.

Dike, P. H., observations in atmospheric electricity, 27, 197.

Diller, J. S., Mesozoic of southwestern Oregon, 23, 401; geology of Taylorsville region, Calif., 27, 412.

Dinosaurs, distribution, Lull, 29, 1; musculature of, Lull, 25, 387.

See **GEOLOGY**.

Diopside, relation to calcium and magnesium metasilicates, Wright and Larsen, 27, 1.

Discharge, see **Electric**.

Doelter, C., Petrogenesis, 21, 472.

Dominica, Avifauna of, A. H. Verrill, 21, 337; Hercules beetles, A. H. Verrill, 21, 305; 24, 305.

Doppler, effect in canal streams, Stark, 23, 63; in positive rays in hydrogen, Royds, 29, 81; Strasser, 29, 551.

Dresser, J. A., metamorphic rocks of St. Francis Valley, Quebec, 21, 67; rare rock type from Canada, 28, 71.

Drew, G. A., Invertebrate Zoology, 24, 382.

Drude, Optics, 23, 146.

Drushel, W. A., separation of magnesium, 23, 293; volumetric estimation of lanthanum, 24, 197; potassium as the cobalt-nitrite, 24, 433; estimation of potassium, 26, 329, 555; esters of halogen substituted acids, 30, 72.

Duane W., emission of electricity from radium, 26, 1; range of α -rays, 26, 465.

Duff, A. W., Physics, 27, 85; 28, 556; Physical Measurements, 27, 488.

Duggar, B. M., Fungous Diseases of Plants, 30, 92.

Duncan, D., Life of Herbert Spencer, 27, 99.

Duncan, W. S., Evolution of Matter, 23, 471.

Duralumin, a new alloy, 30, 349.

Dynamics, Elementary, Ferry, 26, 590; 30, 296.
— of Living Matter, Loeb, 21, 479.

E

- Earth**, changes of level of crust, Fisher, 21, 216.
— circulation of atmosphere, Bigelow, 29, 297.
— figure of, and isostasy, Hayford, 22, 185; 29, 193; 30, 290.
— magnetism of, 27, 348.
— Physical History, Babbitt, 27, 91.
— Work on, Suess, 29, 269.
Earthquake Investigation Committee, Japanese, 23, 322; 24, 90; 26, 240.
— California, 1906, 22, 82; 27, 48; 30, 287.
— Messina, Perret, 27, 321.
Earthquakes, de Ballore, 21, 331; 25, 262; origin of mounds, etc., Hobbs, 23, 245.
— Work on, Hobbs, 23, 309; 25, 259, 354; 30, 424.
Eastman, C. R., Dipnoan affinities of Arthroires, 21, 131; Devonian Fishes of the New York formations, 24, 443; Devonian Fishes of Iowa, 27, 415.
Eclipse, solar, 1907, 21, 245.
Economic Geology, Ries, 21, 256; 30, 426.
Eddy, E. A., separation of magnesium, 25, 444; ester formation, etc., 26, 253, 281, 296.
Edgar, G., reduction of vanadic acid, 25, 233; vanadic and molybdic acids, 25, 332; estimation of iron and vanadium, 26, 79; of chromic and vanadic acid, 26, 333; iodometric estimation of vanadic acid, 27, 174; estimation of vanadic and arsenic acids, 27, 299; velocities of reactions between metals and dissolved halogens, 29, 237.
Egypt, Fayûm, Tertiary Vertebrata, Catalogue, Andrews, 22, 465.
Eiszeit und Urgeschichte der Menschen, Pohl, 24, 381.
Ejectamenta, Celestial, Wilde, 30, 296.
Elastic constants of rocks, Adams and Coker, 22, 95.
Electric (Electrical) arc between metallic electrodes, Cady and Arnold, 24, 383; Cady and Vinal, 28, 89; Cady, 28, 239.
— light, Czudnochowski, 23, 65.
— conductivity of air in intense electric fields, Ewell, 22, 368; of flames, Wilson and Gold, 21, 399; of metals, oxides, etc., Bädcker, 23, 461.
— discharge, magnetic rotation of, Mallik, 26, 576.
— discharges in gases, Sieveking, 22, 80; in hydrogen, Kirby, 23, 384; Trowbridge, 29, 341; in strong magnetic fields, 21, 189.
— furnace reactions, Hutton and Petavel, 25, 451.
— radiation, Paetzold, 21, 250.
— rectifier, Wehnelt, 21, 250.
— spark, constitution, Royds, 29, 264; energy of, Heydweiller, 21, 465.
— units, ratio of, Rosa and Dorsey, 24, 443, 500.
— waves, Drude, 23, 64; in wireless telegraphy, Reinhold-Rüdenberg, 25, 451.
— See also **Radio-activity**.
Electricity, atmospheric, recent observations in, Dike, 27, 197.
— Conduction through Gases and Radio-activity, McClung, 29, 190.
— emission from radium, Duane, 26, 1.
— excited by the fall of mercury through gases, Becker, 28, 496.
— Experimental, Searle, 26, 580.
— positive, Thomson, 29, 81; rays of positive, Thomson, 23, 461.
— Sound and Light, Millikan and Mills, 28, 79.
Elektrische Kraftübertragung, Philippi, 21, 81.
Elektrizität, die Strahlen der positiven, Gehrcke, 29, 191.
Electro-Analysis, Smith, E. F., 24, 498.
Electro-Chemistry, Hopkins, 21, 249; Le Blanc, 23, 383; Van Laar, 25, 525.
Electrolytes, influence of magnetic fields on, Berndt, 24, 442.
Electrolytic coherer, Gundry, 21, 326.
Electromagnetic waves over plane surfaces, Zenneck, 24, 441.
— theory of light, Kunz, 30, 313.

- Electrometer**, gold leaf, effect of temperature, Bottomley, **25**, 347.
- Electrometers**, quadrant, Schulze, **25**, 451.
- Electron Theory**, Fournier d'Albe, **23**, 145.
- Electrons**, Lodge, **23**, 462; Abraham and Longevin, **21**, 466.
- constitution of, Kaufmann, **21**, 398.
- emission from metallic oxides, Jentzsch, **26**, 512.
- initial velocities of, Hull, **28**, 251.
- moving, Hupka, **29**, 189.
- negative kinetic energy of, Richardson, **26**, 512.
- positive, in the sodium atom, Wood, **25**, 258.
- Electro-Physiology**, Bose, **25**, 525.
- Elektrotechnik**, Heinke, **28**, 79.
- Elements**, Rarer, Browning, **27**, 262.
- Elephant**, evolution, Lull, **25**, 169.
- Elkin, W. L.**, parallax investigation of 162 stars, **22**, 471.
- Engineers Manual**, Ferris, **28**, 566.
- Enzyme action**, Bayliss, **27**, 100.
- Equations**, Differential, Campbell, **23**, 159.
- Erblichkeitslehre**, Elemente der exakten, Johannsen, **28**, 85.
- Erosion** as time-measure, Lev-erett, **27**, 349.
- Eruptions**, submarine, near Pantelleria, Washington, **27**, 131.
- Erythrea**, East Africa, petrography, Manasse, **29**, 87.
- Esperanto**, Griffin, **23**, 471.
- Ethnology**, Bureau of American, publications, **21**, 260; **24**, 89, 91; **26**, 591; **28**, 87.
- Euler**, Works of, **28**, 88.
- Evans, N. N.**, gedrite, **25**, 509.
- Eve, A. S.**, radium in minerals, **22**, 4; relative activity of radium and thorium, **22**, 477.
- Evolution**, Essays on, Poulton, **27**, 193.
- and Animal Life, Jordan and Kellogg, **24**, 449.
- of the elephant, Lull, **25**, 169; of the horse, Lull, **23**, 161.
- of Forces, Le Bon, **26**, 579.
- of Mammals, Hubrecht, **29**, 271; of mammalian teeth, Osborn, **25**, 264.
- of Matter, etc., Duncan, **23**, 471.
- work on, Steinmann, **27**, 341.
- Ewell, A. W.**, air conductivity in intense electric fields, **22**, 368; Gibbs' Theory of reflection of light, **24**, 412; Physical Measurements, **27**, 488; **30**, 350; Physical Chemistry, **28**, 555.
- Expansion coefficient**, method of determining, Williams, **28**, 180.
- Extinction angles**, measurement of, Wright, **26**, 349.

F

- Farlow, W. G.**, Bibliographical Index of North American Fungi, vol. i, pt. 1, **21**, 87.
- Farr, H. V.**, determination of arsenic, **27**, 316.
- Farrington, O. C.**, Shelburne and South Bend meteorites, **22**, 93; analysis of iron shale from Canyon Diablo, **22**, 303; times of fall of meteorites, **29**, 211; new Pennsylvania meteorite, **29**, 350.
- Fauna**, see **GEOLOGY, ZOOLOGY**.
- Feldspars**, determination, Wright, **21**, 361; decomposition, **23**, 231. See **MINERALS**.
- Fenner, C. N.**, crystallization of a basaltic magma, **29**, 217.
- Fenton, H. J. H.**, Chemistry, **28**, 554.
- Fernald, M. R.**, Gray's Botany, **26**, 518.
- Fernphotographie**, Elektrische, Korn, **24**, 82.
- Ferris, C. E.**, Manual for Engineers, **28**, 566.
- Ferry, E. S.**, Practical Physics, **25**, 452; Dynamics, **30**, 296.
- Field Columbian Museum** publications, **21**, 408; **22**, 93; **24**, 88; **25**, 532; **27**, 493.
- Filter tubes**, Penfield and Bradley, **21**, 453.
- Filtering** crucible, Gooch and Beyer, **25**, 249.
- Finland**, igneous rocks of, Hackman, **21**, 85.
- Fisher, O.**, changes of level in the earth's crust, **21**, 216.
- Fizeau** on change of azimuth of polarization, **24**, 498.
- Flames**, electrical conductivity, Wilson and Gold, **21**, 399.
- Fletcher, L.**, Study of Rocks, **27**, 490.

- Flies**, African, Blood-sucking, Austen, **29**, 92; British, Austen, **22**, 476.
- Fliess**, W., Pfennig, **21**, 407.
- Flight** of birds, Trowbridge, **21**, 145.
— origin of, Nopcsa, **25**, 528.
- Flint**, G. M., gahnite, **26**, 584.
- Flint**, W. R., precipitation of tellurium dioxide, **28**, 112; complexity of tellurium, **28**, 347; **30**, 209.
- Flora**, see **BOTANY, GEOLOGY.**
- Florida** geol. survey, see **GEOLOGICAL REPORTS.**
- Florissant** fossils, see **Colorado.**
- Fog** chamber, drop of pressure in, Barus, **22**, 81, 339; standardized, Barus, **26**, 87; Thomson's constant determined, Barus, **26**, 324.
- Foods**, microscopy of vegetable, Winton, **21**, 335.
- Foote**, H. W., determination of columbium and tantalum, **30**, 393, 401.
- Foote**, W. M., Mineral Catalogue, **27**, 490.
- Ford**, W. E., stibiotantalite, **22**, 61; beryl crystals, **22**, 217; chalcopyrite crystals from Japan, **23**, 59; stephanite crystals from Arizpe, Mexico, **25**, 244; orthoclase twins, **26**, 149; neptunite crystals, California, **27**, 235; mineral notes, **28**, 185; Second Appendix to Dana's Mineralogy, **28**, 196; remarkable twins of atacamite, **30**, 16; effect of the presence of alkalis in beryl, **30**, 128; labradorite, **30**, 151.
- Fossil**, see **BOTANY, GEOLOGY.**
- Fox Hills** sandstone, Stanton, **30**, 172.
- Franklin**, B., Bicentennial celebration, **21**, 406; **23**, 160.
- Franklin**, W. S., Physics, **25**, 258; **27**, 85; Light and Sound, **29**, 82.
- Franklin Furnace**, N. J., minerals of, Palache, **29**, 177.
- Fraprie**, F. R., cesium chromates, **21**, 300.
- Friend**, J. N., Theory of Valency, **27**, 337.
- Furlong**, E. L., exploration of Samwel Cave, California, **22**, 235.
- G**
- Gage**, A. P., Physics, **25**, 259.
- Gale**, H. G., Physics, **22**, 345, 346.
- Gardiner**, J. S., Fauna, etc., of Maldives and Laccadives, **23**, 241.
- Garrett**, A. E., Periodic Law, **28**, 554.
- Gas** thermometer, see **Thermometer.**
- Gaseous** suspensions, de Broglie, **29**, 264.
- Gases**, behavior of metallic copper toward, Sieverts and Krumhaar, **30**, 412.
— electric discharge in, Sieveking, **22**, 80.
— pressure of light on, Lebedew, **30**, 81.
— in rocks, Chamberlin, **27**, 190.
— viscosity, Zemplen, **28**, 496.
- Gaskell**, W. H., Origin of Vertebrates, **27**, 192.
- Gates**, F. L., decomposition of hydrochloric acid, **28**, 435.
- Gauss**, C. F., complete works, vol. vii, **23**, 470.
- Geochemistry**, Data, Clarke, **25**, 458.
- Geographical** Tables, Albrecht, **27**, 493.
- Geography**, Demangeon, **23**, 399.
— Physical, C. T. Wright, **23**, 323.
— Physical and Commercial, Gregory, Keller and Bishop, **30**, 158.
- Geologic** History, Outlines, Willis and Salisbury, **30**, 354.
- Geological** Congress, International, meeting at Mexico City, **21**, 406; **22**, 463.
— map of Buffalo quadrangle, Luther, **22**, 347.
— — of Cape of Good Hope, **23**, 465; **25**, 83; **26**, 98.
— — of Connecticut, Gregory and Robinson, **23**, 392.
— — of Illinois, **22**, 543.
- GEOLOGICAL REPORTS AND SURVEYS.**
- Alabama, **24**, 84.
- Brazil, **23**, 308.
- Canada, Annual reports, **21**, 404; vols. xiv, xv, **22**, 544; vol. xvi, **26**, 239; Index to Reports 1885-1906, **26**, 514; publications, **21**, 404; **25**, 455; **27**, 87; **29**, 365; **30**, 357; Summary reports, 1905, 1906, **23**, 306; 1907,

GEOLOGICAL REPORTS AND SURVEYS.

- 25, 527; 1908, 28, 80; 1909, 30, 357.
 Cape of Good Hope, Annual reports, 10th, 1905, 23, 308; 12th, 1907, 26, 582; 13th, 1908, 29, 194; Geol. maps, 23, 465; 25, 83; 26, 98.
 Colorado, 28, 559; 30, 423.
 Connecticut, bulletin, no. 6, 23, 385; no. 7, 23, 392; no. 8, 24, 447; no. 9, 23, 393; no. 14, 29, 560.
 — biennial reports, second, 23, 393; third, 27, 264.
 Florida, Annual reports, first, 26, 581; second, 29, 265.
 Illinois, bulletins, nos. 1, 2, 22, 543; no. 3, 23, 227; no. 4, 24, 447; no. 5, 25, 353; no. 7, 26, 166; no. 9, 27, 489; no. 10, 28, 560; no. 11, 29, 267; nos. 13, 14, 30, 85; Geol. map, 25, 457; Year book, 1907, 27, 89.
 India, 24, 181.
 Indiana, Annual reports, 30th, 22, 544; 31st, 25, 82; 32d, 27, 88; 33d, 28, 559.
 Iowa, 1905, 23, 393; 1906, 26, 97; 1907, 27, 339; 1908, 29, 459.
 Kansas, 29, 268.
 Maryland, 1905, 21, 331; 1906, 23, 146; 26, 97; 1907, 24, 180, 181; 1908, 30, 422, 423.
 Michigan, 1905, 23, 227; 1906, 25, 354, 456; 1907, 28, 559.
 Mississippi, 27, 264.
 New Jersey, 1905, 22, 544; 1906, 25, 82, 152; 1907, 26, 514; 1908, 28, 499; Geol. folio, 27, 189.
 New Zealand, bulletin no. 1, 22, 542; no. 2, 23, 464; no. 3, 25, 83; no. 4, 25, 526; no. 5, 27, 89; no. 8, 29, 460; 2d Ann. report, 1908, 28, 81.
 North Carolina, vol. 1, 1905, 21, 253; vol. 2, 1907, 25, 159; bulletins 27, 87; 30, 291.
 North Dakota, Biennial report, fourth, 25, 457; fifth, 29, 192.
 Ohio, bulletins nos. 4 and 5, 22, 543; no. 6, 23, 72.
 Oklahoma, 27, 339.
 Pennsylvania, 29, 266.
 South Australia, 30, 85.
 United States, 26th annual report, 21, 250; lists of publica-

GEOLOGICAL REPORTS AND SURVEYS.

- tions, 21, 81, 175, 251, 332; 22, 84, 346.
 — — 27th annual report, 23, 225; New director, G. O. Smith, 23, 397; lists of publications, 23, 65, 226; 24, 82, 376.
 — — 28th annual report, 25, 149; lists of publications, 25, 150, 264, 352; 26, 95, 402.
 — — 29th annual report, 27, 188; lists of publications, 27, 86, 406; 28, 80, 557.
 — — 30th annual report, 29, 191; lists of publications, 29, 86, 363; 30, 83, 417.
 Vermont, 1906, 23, 147; 1907-8, 27, 88.
 Virginia, bulletin no. 1, 21, 255; nos. 2, 3, 22, 87; 29, 267, 557.
 Western Australia, bulletins, nos. 23, 25, 23, 463, 464; no. 24, 24, 84; nos. 27, 28, 30, 25, 527; no. 29, 26, 166; nos. 31, 34, 27, 341; no. 32, 28, 81; no. 35, 29, 87.
 West Virginia, 1907, 25, 83; 1908, 26, 581; 1909, 28, 498; 29, 459; publications, 30, 290.
 Wisconsin, bulletin, no. 14, 21, 470; no. 15, 24, 83; no. 16, 24, 500; no. 20, 26, 582; publications, 26, 98; 27, 489.
Geological Society of London, Centenary, 24, 92.
Geologie, Handbuch der Regionalen, Steinmann and Wilckens, 29, 558.
 — Traité, Haug, 25, 261, 529.
Geologische Prinzipienfragen, Reyer, 26, 238.
Geologists, Handbook, Hayes, 28, 561.
Geology, Chamberlin and Salisbury, 21, 400.
 — Alaska, Brooks and Abbe, 22, 187.
 — American, History of, Merrill, 21, 467.
 — Connecticut, Rice and Gregory, 23, 385.
 — Economic, Ries, 30, 426.
 — Willis and Salisbury, 30, 354; of the United States, Ries, 21, 256.
 — Treatise, de Lapparent, 21, 401.

GEOLOGY.

- Alpen im Eiszeitalter, Penck and Brückner, **25**, 84; **27**, 341.
 Alps, Schmidt's sections, **25**, 155.
 Ammonites, Yorkshire types, Buckman, **30**, 157.
 Ankylosauridæ, Brown, **25**, 528.
 Antelopes, Tertiary of Nevada, Merriam, **29**, 271.
 Archhelenis and Archinotis, von Ihering, **26**, 513.
 Arkansas Valley, Colorado, geology, Darton, **23**, 149.
 Arthrodiæ, American, Hussakof, **28**, 411; Dipnoan affinities, Eastman, **21**, 131.
 Arthropycus and Dædalus of burrow origin, Sarle, **21**, 330.
 Arthropoden, Phylogenie, Handlirsch, **22**, 349.
 Auburn-Genoa quadrangles, Luther, **29**, 463.
 Baptonodon, Wyoming, Gilmore, **23**, 193.
 Bauhinia, Cretaceous, new, from Alabama, Berry, **29**, 256.
 Bellerophon limestone, Kossmat and Diener, **30**, 420.
 Bighorn Mts. geology, Darton, **23**, 67.
 Bird, fossil, from the Wasatch, Loomis, **22**, 481.
 Birds, origin of, Pyecraft, **22**, 547.
 Botryocrinus, Bather, **22**, 468.
 Boulders in conglomerate, fractured, Campbell, **22**, 231.
 Brachauchenius, skull of, Williston, **25**, 85.
 Brachiopod, new Devonian, Greger, **25**, 313.
 Brachiopods from the Mississippian, Greger, **29**, 71.
 Bragdon formation, Hershey, **21**, 58.
 Bryozoa, Bassler, **21**, 469; British Museum Catalogue, Gregory, **29**, 195.
 Bryozoans of Rochester shale, Bassler, **23**, 72.
 Buena Vista, priority in use of name, Prosser, **21**, 181.
 Camarophorella, Hyde, **26**, 514.
 Cambrian conglomerate, Rip-ton, Vt., Dale, **30**, 267.
 — faunas of China, Walcott, **22**, 188; geology of Cordilleran area, Walcott, **27**, 414; **30**, 419; transition fauna of Braintree, Mass., Shimer, **24**, 176.

GEOLOGY.

- Camptosaurus, osteology, Gilmore, **28**, 410.
 Carboniferous, upper, Texas and New Mexico, Richardson, **29**, 325.
 — genera of, Ulrich and Bassler, **21**, 469.
 — crustacea of Scotland, Peach, **27**, 488.
 — fauna from Nova Zembla, Lee, **28**, 562.
 — Invertebrata, of N. S. Wales, Etheridge and Dun, **23**, 149.
 — and Permian, Russian, Schuchert, **22**, 29, 143.
 Carnivora and insectivora of the Bridger Basin, Matthew, **28**, 500.
 Cat, skull, etc., of an extinct, Merriam, **28**, 501.
 Cement resources of Virginia, Bassler, **30**, 157.
 Cenozoic Mammal horizons of No. America, Osborn, **29**, 88.
 Cephalopoda of Champlain Basin, Ruedemann, **23**, 148.
 Ceratops, new name for, Lull, **21**, 144.
 Ceratopsia, Hatcher, **26**, 98.
 Cervidæ, osteology of American, Matthew, **27**, 93.
 Chalicotheres, American, Peterson, **27**, 94.
 Chalk formations of Texas, Gordon, **27**, 369.
 Champsosaurus Cope, osteology of, Brown, **21**, 330.
 Channels, buried, of Hudson river, Kemp, **26**, 301.
 Chazy formation and fauna, Raymond, **22**, 348.
 — Pelmatozoa, Hudson, **23**, 467.
 Clays, Cretaceous, effects of glaciation on, Hawkins, **30**, 350.
 Cleavage, slaty, current theories, Becker, **24**, 1.
 Clymenia in Montana, Raymond, **23**, 116.
 Coleoptera, new fossil from Florissant, Wickham, **28**, 126; **29**, 47.
 Conglomerates, desiccation, in the coal-measures of Ohio, Hyde, **25**, 400.
 Copper deposits of Arizona, Lindgren, **21**, 332.

GEOLOGY.

- Copper deposits of Missouri, Bain and Ulrich, **21**, 180.
 — deposits of Nevada, Lawson, **22**, 467.
 — River region, Alaska, geology, Mendenhall, **21**, 82.
 Coral, see **Coral**.
 — reef problem, Daly, **30**, 297.
 Cretaceous clay at Boston, Clapp, **23**, 183.
 — flora, New York and New England, Hollick, **23**, 233.
 — Paleontology, New Jersey, Weller, **25**, 152.
 — of Montana, Hell Creek beds, Brown, **25**, 86.
 — of Santa Clara region, California, Crandall, **24**, 33.
 Crinoids, origin of muscular articulation, Clark, **29**, 40; pentamerous symmetry of, Clark, **29**, 353.
 — of Tennessee, Troost's, Wood, **28**, 561.
 Crustal warping in Ontario, Pirsson, **30**, 25.
 Cybele, new American, Raymond and Narraway, **22**, 349.
 Cycads, historic, Wieland, **25**, 93; mesozoic, **21**, 175.
 Dakotan series of New Mexico, Keyes, **22**, 124.
 Dendroid graptolites of the Niagaran dolomites, Bassler, **28**, 561.
 Devonian fauna of the Ouray limestone, Kindle, **29**, 194.
 — faunas of Burma, Reed, **28**, 410.
 — fishes of Iowa, Eastman, **27**, 415; of the New York formations, Eastman, **24**, 443.
 — fossils, Clarke, **23**, 467.
 — history of New York, Clarke, **26**, 93.
 — middle, of Ohio, Stauffer, **30**, 354.
 — of Central Missouri, Greger, **27**, 374.
 — of eastern America, Coblenzian invasion, Clarke, **24**, 502.
 Diamond fissures, South Africa, Harger, **21**, 471.
 Diatomaceous dust on the Bering Sea ice, Kindle, **28**, 175.
 Dinosaurs, distribution, Lull, **29**, 1; cranial musculature,

GEOLOGY.

- Lull, **25**, 387; work on, von Huene, **25**, 86.
 Diplodocus Marsh, osteology, Holland, **21**, 470.
 Drift, form of outwash, Carney, **23**, 336.
 Earth, see **Earth**.
 Earthquake, see **Earthquake**.
 Elephant, evolution, Lull, **25**, 169.
 Encrinurus, Vogdes, **23**, 467.
 Entelodontidæ, revision of, Peterson, **28**, 411.
 Eocene fossils, Green River, Wyoming, Cockerell, **28**, 447.
 — horses, American, Granger, **25**, 528.
 Eodevonaria, Breger, **22**, 534.
 Erdbebenkunde, eine Einführung in die, Hobbs, **30**, 424.
 Erde, das Antlitz der, Suess, **29**, 269.
 Erosion, study of, Leverett, **27**, 349.
 Essex Co., Mass., geology, etc., Sears, **21**, 255.
 Eurypterus shales, Clarke, **23**, 467.
 Faults, postglacial of eastern New York, Woodworth, **23**, 228.
 Fauna, Guadalupian, Girty, **27**, 413; Jurassic of Mazapil, Burckhardt, **23**, 316; lower Miocene from So. Dakota, Matthew, **24**, 379; marine of Zacatecas, Burckhardt, **23**, 316; of Cardenas, Böse, **23**, 318; of Montana, upper Devonian, Raymond, **23**, 116.
 Felidæ, phylogeny, Matthew, **30**, 421.
 Finger lakes, ancient, in Ohio, Hubbard, **25**, 239.
 Fish fauna of the Albert shales, Lambe, **28**, 165.
 Fishes, Palæoniscid, from New Brunswick, Lambe, **30**, 354.
 Flora, Cretaceous of New York and New England, Hollick, **23**, 233; Cretaceous of Quedlinburg, Richter, **23**, 238; **29**, 270; Jurassic of Oregon, Knowlton, **30**, 33; Mesozoic of the U. S., Knowlton, **21**, 175; Rhætic of Persia, Zeiller, **23**, 236.

GEOLOGY.

Florissant fossils, see **Colorado**.
Fossil insects, see **Insects**.

Fossil plants, see also **BOT-ANY**.

Fossils from China, Lorenz, **23**, 148.

— from Silurian of Tennessee, Foerste, **27**, 489.

— Paleozoic, Whiteaves, **23**, 71.

Fox Hills sandstone, Stanton, **30**, 172.

Fulgur, genesis, Maury, **27**, 335.

Fusulina, Asiatic, Dyhrenfurth, **29**, 194; Yabe, **23**, 315.

Gastropods, Spitz, **25**, 153.

Geological section at Cape Thompson, Alaska, Kindle, **28**, 520.

Georgetown quadrangle, Colorado, geology, Spurr, Garrey and Ball, **27**, 408.

Glacial, Glaciers, Glaciation, see these words.

Glossopteris flora, British museum, catalogue, Arber, **21**, 474.

Gold Hill mining district of North Carolina, **30**, 291.

Goldfield district, Nevada, geology and ore deposits, Ransome, **29**, 85.

Grand Canyon, Arizona, geology, Noble, **29**, 369, 497; Robinson, **24**, 409.

Graptolites of New York, Ruedemann, **26**, 402.

Gravity streams, corrasion by, Andrews, **30**, 86.

Grayback mining district, Colorado, geology, **30**, 423.

Guadalupian fauna, Girty, **27**, 413.

— and Kansas sections, correlation of, Beede, **30**, 131.

Guaynopita district, Mexico, geology, Hovey, **24**, 503.

Hallopus, von Huene and Lull, **25**, 113.

Heidelberg man, **27**, 416.

Hell Creek beds of Upper Cretaceous, Montana, Brown, **25**, 86.

Höhlenkunde, von Knebel, **21**, 473.

Horse from the lower Miocene, Loomis, **26**, 163.

— family, evolution, Lull, **23**, 161.

GEOLOGY.

Horses, fossil, No. Dakota and Montana, Douglass, **27**, 94.

Hybocystis in Ontario, Parks, **26**, 240.

Hyolithidae, lower Paleozoic, from Girvan, Reed, **29**, 194.

Ice-age, ice-movement, ice-sheet, see these words.

Ichthyosauria, Triassic, Merriam, **27**, 91.

Indoceras, Noetling, **22**, 349.

Insects, see **Insects**.

Isostasy, geodetic evidence of, Hayford, **22**, 185; and figure of the Earth, Hayford, **29**, 193; **30**, 290.

Judith River beds, geology, Stanton and Hatcher, **21**, 177.

Jurassic flora of Oregon, Knowlton, **30**, 33.

— formation of Texas, paleontology, Cragin, **21**, 179.

— fossils from Black Hills, Whitfield and Hovey, **23**, 467; from Franz Josef Land, Whitfield, **22**, 263; localities of supposed, Veatch, **21**, 457.

— strata of South Dorset, Buckman, **29**, 461.

Keewatin ice sheet, Montana lobe, Calhoun, **22**, 468.

Kilauea and Mauna Loa, Brigham, **29**, 363.

Laccoliths of Piatigorsk, V. de Derwies, **21**, 184.

Lakes, see **Lakes**.

Laramie, application of the term, Veatch, **24**, 18; Peale, **28**, 45.

Lead and zinc deposits of Virginia, Watson, **21**, 255; of Wisconsin, Grant, **21**, 470; of Kentucky, Ulrich and Tangier Smith, **21**, 84.

Lepadocystis clintonensis, Ontario, Parks, **29**, 404.

Lower Paleozoic of Illinois, Savage, **25**, 431.

Lycopodium, Cretaceous, Berry, **30**, 275.

Lyttoniidae, Noetling, **22**, 349.

Magnetic iron ores, Adirondack, geology, Newland and Kemp, **26**, 238.

Mammal horizons, Tertiary, of No. America, Osborn, **24**, 504.

Mammalian migration, Matthew, **25**, 69, 154.

GEOLOGY.

- Mammalian molar teeth, Evolution, H. F. Osborn, **25**, 264.
 Mammals, new fossil, from Egypt, Osborn, **29**, 88.
 — Orders of, Gregory, **30**, 88.
 — Tertiary horizons in N. America, Osborn, **29**, 88.
 Marysville mining district, Montana, Barrell, **24**, 35.
 Mauch Chunk shale, Barrell, **25**, 353.
 Meso-Silurian deposits of Maryland, Prouty, **26**, 563.
 Mesozoic Floras of U. S., Ward, **21**, 175.
 — section in Alaska, Stanton and Martin, **21**, 181.
 — of southwestern Oregon, Diller, **23**, 401.
 Miocene drum fish, Smith, **28**, 275.
 — foraminifera of California, Bagg, **21**, 253.
 — Lower, fauna from So. Dakota, Matthew, **24**, 379; horse from, Loomis, **26**, 163; Rhinocerotidæ from, **26**, 51.
 Mississippian brachiopods, Greger, **29**, 71; formations of Rio Grande Valley, N. M., Gordon, **24**, 53.
 Monarch mining district, Colorado, geology, Crawford, **30**, 423.
 Mounds, earthquake origin of, Hobbs, **23**, 245.
 Mount Greylock, geological history, Dale, **23**, 149.
 Mt. Taylor region, N. M., Shimer and Blodgett, **25**, 53.
 Mountain building and abyssal igneous injection, Daly, **22**, 195.
 Niagaran limestone in the Chicago area, Weller, **24**, 445.
 Ocean, limeless, of Pre-Cambrian time, Daly, **23**, 93, 393.
 Ohio geological formations, nomenclature, Prosser, **21**, 181.
 Oklahoma, geology, Gould, **22**, 87.
 — oil and gas fields, Perry and Hutchinson, **28**, 560.
 Olenellus, Walcott, **30**, 419.
 Oligocene of the Cypress Hills, Canada, Lambe, **28**, 501.
 — lizards, Douglass, **27**, 94.

GEOLOGY.

- Olympic Mts., geology, Arnold, **28**, 9.
 Ordovician rocks of Kentucky, upper, Nickles, **22**, 348.
 — and Silurian formations in Illinois, Savage, **28**, 509.
 Ore deposits of New Mexico, Lindgren, et al., **30**, 427.
 Ouray folio, Colorado, Cross, Howe, and Irving, **25**, 352.
 — limestone, Devonian fauna, Kindle, **29**, 194.
 Owl Creek Mts., Wyoming, geology, Darton, **22**, 467.
 Paleobotany, see Flora above, also **BOTANY**.
 Paleogeography, of North America, Schuchert, **29**, 552.
 Paleolithic man, restoration, Lull, **29**, 171.
 Paleontologia Universalis, **24**, 447.
 Paleontologica, Miscellanea, Fritsch, **24**, 502.
 Paleozoic corals, early stages, Gordon, **21**, 109.
 — formations in Texas, Richardson, **25**, 474.
 — fossils of Burma, Reed, **25**, 262.
 — Insects, see **Insects**.
 — platform of North America, Ruedemann, **30**, 403.
 — Lower, of Illinois, Savage, **25**, 431; formations in New Mexico, Gordon and Gratton, **21**, 390; of New Mexico, Lee, **26**, 180.
 Parapsonema corytophysa, Fuchs, **22**, 263.
 Patuxent folio, Shattuck, Miller and Bibbins, **25**, 352.
 Peat beds of Anticosti Island, Twenhofel, **30**, 65.
 — in Michigan, Davis, **25**, 456.
 Pebbles, faceted, of Brazil, Lisboa, **23**, 9, 150.
 Peccaries, new genus, Loomis, **30**, 381.
 Pecten lioicus, Dall, **23**, 457.
 Pectens of California, Arnold, **22**, 188.
 Pelycosauria, E. C. Case, **25**, 84.
 Pennsylvanian rocks of Oklahoma, Gould, Ohern and Hutchinson, **30**, 157.
 Permian insects, see **Insects**.
 — of India, Koken, **26**, 165.

GEOLOGY.

- Permian, Upper, of Oklahoma and Texas, Beede, **24**, 86.
 Petrogenesis, Doelter, **21**, 472.
 Phasmids, von Wattenwyl and Redtenbacher, **23**, 398.
 Physiography of the Central Andes, Bowman, **28**, 197, 373.
 Plains in Cape Colony, Schwarz, **24**, 185.
 Plants, Fossil, Seward, **30**, 356.
 Pleistocene bone deposit, Arkansas, Brown, **27**, 93.
 — deposits of South Carolina, Pugh, **22**, 186; of Nantucket, Cushman, **22**, 187.
 — flora, Alabama, Berry, **29**, 387.
 — geology of Mooers Quadrangle, Woodworth, **22**, 86.
 — new ruminants from, Gidley, **21**, 470; **28**, 412.
 Plesiosaurs, North American, Williston, **21**, 221.
 Pliocene climate in Alaska, Dall, **23**, 457.
 — fauna from Nebraska, Matthew and Cook, **28**, 500.
 Pre-Cambrian rocks of Georgetown, Colorado, Ball, **21**, 371.
 — time, limeless ocean of, Daly, **23**, 93, 393.
 Preglacial deposits, Atlantic, Bowman, **22**, 313.
 Primates, Wasatch and Wind River, Loomis, **21**, 277.
 Proboscidean from the Nebraska Miocene, Cook, **28**, 183.
 Procamelus from the Montana Miocene, Gidley, **28**, 411.
 Proceratops, Lull, **21**, 144.
 Prorosmarus alleni from Virginia Miocene, Berry and Gregory, **21**, 444.
 Protostega, osteology, Wieland, **21**, 469.
 Protostegidæ, revision, Wieland, **27**, 101.
 Pseudolingula, Mickwitz, **28**, 562.
 Ptilodus, notes on, Gidley, **28**, 411.
 Red beds of southwestern Colorado, Cross and Howe, **21**, 328; of Guadalupian section, Beede, **30**, 131.
 Rhinoceros, fossil, from No.

GEOLOGY.

- Dakota and Montana, Douglass, **27**, 93.
 Rhinocerotidæ of Lower Miocene, Loomis, **26**, 51.
 Rock floor of New York, configuration, Hobbs, **21**, 182.
 Rock-weathering, peculiarities of, Hilgard, **21**, 261.
 Rocks, see **ROCKS**.
 Rodents, Wasatch and Wind River, Loomis, **23**, 123.
 Roxbury conglomerate, Mansfield, **23**, 67.
 Rugosa, Duerden and Carruthers, **23**, 315.
 Samoa, geology, Friedlander, **30**, 425.
 Säugetierontogenese, die, Hubrecht, **29**, 271.
 Saurian, armored, from the Niobrara, Wieland, **27**, 250.
 Schistosity caused by crystallization, Wright, **22**, 224.
 Schoharie Valley, geology, Grabau, **23**, 148.
 Serra de Jacobina, Brazil, geology, Branner, **30**, 385.
 Serra do Mulato, Brazil, geology, Branner, **30**, 256.
 Silurian fauna, in Western America, Kindle, **25**, 125.
 — fossils, Tennessee, etc., Foerste, **27**, 489.
 — section at Arisaig, Nova Scotia, Twenhofel, **28**, 143.
 Starfishes, Lower Devonian, of Germany, Schöndorf, **29**, 195.
 Stegosaurus, armor, Lull, **29**, 201; restoration, Lull, **30**, 361.
 Stenomylus, genus, Loomis, **29**, 297.
 Stone Implements of South Africa, Johnson, **23**, 465.
 Strenuella strenua, Shimer, **23**, 199, 319.
 Streptelasma rectum, Hall, Brown, **23**, 277.
 Stromatoporoids, Parks, **24**, 86; **26**, 240; **30**, 355.
 Strophomenacea, Yakovlew, **25**, 457.
 Syringothyris, Schuchert, **30**, 223.
 Taylorsville region, California, geology, Diller, **27**, 412.
 Teleoceras from the Miocene of Nebraska, Olcott, **28**, 403.

GEOLOGY.

- Teratornis, a new Avian genus, Miller, **28**, 501.
- Terraces, aggraded, of the Rio Grande, Keyes, **24**, 467; in Ohio, Hubbard, **25**, 108; wave-cut in Keuka Valley, Carney, **23**, 325.
- Tertiary formations of the John Day region, Merriam, **24**, 377.
- insects, see **Insects**.
- mammal horizons of No. America, Osborn, **24**, 504.
- peneplain in Arizona and New Mexico, Robinson, **24**, 109.
- plants, Cockerell, see **Colorado**.
- Vertebrata, of Fayûm, Egypt, Catalogue, Andrews, **22**, 465.
- Tetraceratops from Texas, Matthew, **27**, 93.
- Tidal and other problems, Chamberlin, Moulton, et al., **28**, 188.
- Time measures, weathering and erosion as, Leverett, **27**, 349.
- Titanotheres from the Eocene and Oligocene, Osborn, **29**, 90.
- Tombador escarpment in Bahia, Brazil, Branner, **30**, 335.
- Tonopah Mining District, Nevada, geology, Spurr, **21**, 83.
- Tooth-cusp development, Gidley, **22**, 546.
- Trias, stratigraphy of the Western American, Smith, **24**, 446.
- Triassic cephalopod genera of America, Hyatt and Smith, **21**, 253.
- reptile Hallopus, von Huene and Lull, **25**, 113.
- Tribes Hill formation, age, Raymond, **30**, 344.
- Trilobites in the Chicago area, Weller, **24**, 445; East-Baltic, Schmidt, **23**, 315; **24**, 445.
- Trochiliscen, Karpinsky, **23**, 314.
- Turtles, Fossil, Hay, **26**, 516; Wieland, **27**, 101.
- from the Upper Harrison beds, Loomis, **28**, 17.
- Unconformities, significance of certain, Keyes, **21**, 296.
- Unionidæ, from Montana Laramie clays, Whitfield, **24**, 446.
- Vertebrates, Carboniferous, of

GEOLOGY.

- the U. S. National Museum, Moodie, **29**, 88.
- fossil, in the Amer. Museum Natural History, Catalogue, Hussakof, **27**, 92.
- Volcanic activity, Barus, **24**, 483.
- Volcanoes, see **Volcanoes**.
- Volutilithes petrosus, Smith, **22**, 263.
- Wasatch deposits, Loomis, **23**, 356.
- Wyoming, Big Horn basin, geology, Fisher, **24**, 503.
- Yakutat coastal plain of Alaska, Blackwelder, **27**, 459.
- Zonal Belt Hypothesis, Wheeler, **27**, 265.
- Geometry**, Lyman, **26**, 590.
- Geophysical** research, Gibbs, **21**, 461.
- Georgetown** quadrangle, Colorado, geology, Ball, **21**, 371; Spurr, Garrey and Ball, **27**, 408.
- Gesteine**, Physiographie der massigen, Rosenbusch, **23**, 394; **26**, 583.
- Getman, F. H.**, Physical Chemistry, **25**, 450.
- Gibbs'** geometrical theory of reflection of light, Ewell, **24**, 412.
- Gibbs, J. W.**, geophysical research, **21**, 461.
- Scientific Papers, Bumstead and Van Name, **23**, 144.
- Gibbs, Wolcott**, obituary notice, Jackson, **27**, 253.
- Gidley, J. W.**, tooth-cusp development, **22**, 546.
- Gilbert, G. K.**, California earthquake of 1906, **27**, 48.
- Gilman, A. F.**, Chemical Analysis, **25**, 450.
- Gilmore, C. W.**, Baptonodon, from Wyoming, **23**, 193.
- Girty**, Guadalupian fauna, **27**, 413.
- Glacial** boulders in Blaini formation, India, Holland, **27**, 413.
- history of Nantucket, Wilson, **23**, 67.
- motion, theory, Willcox, **23**, 231.
- overflow channels in New York, Carney, **25**, 217.
- period in non-glaciated regions, Huntington, **25**, 353.
- studies of the Austrian Tyrol, Flusin and Bernard, **30**, 424.

- Glacial waters** in New York, Fairchild, 27, 340.
- Glaciation**, at Bergen, Norway, 26, 583.
- effects on Cretaceous clays, Hawkins, 30, 350.
 - of Orford and Sutton Mts., Quebec, Wilson, 21, 196.
 - Permian, in India, 26, 165.
 - Pleistocene, and the coral reef problem, Daly, 30, 297.
 - of the Uinta and Wasatch Mts., Atwood, 27, 340.
- Glaciers**, Canadian, Scherzer, 25, 261.
- periodic variations, Reid and Muret, 23, 68; Brückner and Muret, 26, 98; 28, 560; 30, 424.
 - See ice-age, ice-sheet.
- Glaciology**, new journal of, 22, 93.
- Glass**, elastic constants, Adams and Coker, 22, 117.
- reflection at polarizing angle, Rayleigh, 26, 512.
 - and iron, vacuum-tight seals between, Sand, 30, 413.
- Gleichen, A.**, *Praktische Optik*, 22, 541.
- Gletscherkunde**, *Zeitschrift für*, 22, 93.
- Globuskarte**, Sipman, 25, 268.
- Gockel, A.**, die Luftelektrizität, 28, 77.
- Gold deposits**, Cripple Creek, Lindgren and Ransome, 23, 466.
- Goldschmidt, V.**, anhydrite twin from Aussee, 24, 487; goethite, 29, 235.
- Goniometer lamp**, new, Wright, 27, 194.
- Gooch, F. A.**, separation of arsenic from copper, 22, 488.
- estimation of iron, 23, 365.
 - determination of copper, 24, 65; potassium aluminium sulphate, 24, 167.
 - reduction of vanadic acid, 25, 233; filtering crucible in electrolytic analysis, 25, 249; separation of magnesium, 25, 444.
 - estimation of chromium, 26, 85.
 - electrolytic estimation of lead and manganese, 27, 59; determination of silver as chromate, 27, 241; iodometric estimation of silver, 27, 302; copper oxalate in analysis, 27, 448.
- Gooch, F. A.**, determination of free iodine, 28, 33; decomposition of hydrochloric acid, 28, 435; determination of chlorine, 28, 544.
- Goodale, G. L.**, new form of "Container" for Museums, 21, 451; plaster-plaques for museums, 22, 90.
- Goodspeed, A. W.**, *Physics*, 25, 259.
- Gordon, C. E.**, early stages in Paleozoic corals, 21, 109.
- Gordon, C. H.**, lower Paleozoic formations in N. Mexico, 21, 390; Mississippian formations of Rio Grande valley, New Mexico, 24, 58; chalk formations of northeast Texas, 27, 369.
- Gordon College**, Khartoum, report of laboratories, 23, 155; 29, 91.
- Graham, R. P. D.**, pseudomorphs after laumontite and corundum, 22, 47; optical properties of hastingsite, 28, 540.
- Grand Canyon geology**, Robinson, 24, 109; Noble, 29, 369, 497.
- Grating**, use in interferometry, Barus, 30, 161.
- Graton, L. C.**, lower Paleozoic formations in N. Mexico, 21, 390.
- Gravitation**, hypothesis of, discussed, Bumstead, 26, 493.
- Gray Herbarium**, Harvard University, publications, 28, 85.
- Greenland**, minerals of, Böggild, 23, 320.
- rocks of northwest, Belowsky, 21, 184.
 - sea-floor deposits, Böggild, 23, 394.
- Greger, D. K.**, new Devonian brachiopod, 25, 313; Devonian of central Missouri, 27, 374; rare brachiopods from the Mississippian, 29, 71.
- Gregory, H. E.**, geology of Connecticut, 23, 385; geol. map of Connecticut, 23, 392; Bibliography of Connecticut Geology, 24, 447; Physical and Commercial Geography, 30, 158.
- Gregory, W. K.**, *Prorosmarus alleni* from Virginia, 21, 444; Orders of Mammals, 30, 88.
- Griggs, R. F.**, divided lakes in western Minnesota, 27, 388.

- Groth, P.**, Physical Crystallography, **21**, 185; **24**, 381; Chemical Crystallography, **22**, 89; **23**, 153; **27**, 265.
Guadalupian Fauna, Girty, **27**, 413; Beede, **30**, 131.
Guiana, British, gold fields, Harrison, **27**, 409.
 — Dutch, geology, Beekman, **27**, 410.
Guild, F. W., eruptive rocks in Mexico, **22**, 159; molybdenite from Arizona, **23**, 455.

H

- Haber, F.**, Thermodynamics, **26**, 92.
Hale, G. E., Stellar Evolution, **26**, 577.
Halley's comet, Chambers, **30**, 154.
Hallock, W., Evolution of Weights and Measures, **22**, 346.
Hanausek, T. F., Microscopy of Technical Products, **25**, 87.
Hancock, E. L., Mechanics, **28**, 78.
Handlirsch, A., revision of Paleozoic Insects, **21**, 468; Fossile Insekten, **22**, 349; **23**, 311; **24**, 447; **25**, 264; **26**, 584; **27**, 263.
Hardness of minerals, Kip, **24**, 23; Parsons, **29**, 162.
Harker, A., Natural History of Igneous Rocks, **28**, 503.
Harvard Botanical Station, Cuba, **21**, 475; **27**, 94.
 — Observatory, see **Observatory**.
Hatch, F. H., Petrology, **27**, 410.
Hatcher, J. B., geology of Judith River beds, **21**, 177; Ceratopsia, **26**, 98.
Haug, E., Géologie, **25**, 261, 529.
Hauswaldt, H., Interference phenomena, **27**, 490.
Hawaii, report of surveyor, **23**, 321.
Hawaiian and lunar craters, Pickering, **23**, 228.
 — volcanoes, Brigham, **29**, 363.
Hawkins, A. C., effects of glaciation on Cretaceous clays, **30**, 350.
Hay, O. H., Fossil Turtles of North America, **26**, 516.
Hayes, C. W., Handbook for Field Geologists, **28**, 561.
Hayford, J. F., geodetic evidence of isostasy, **22**, 185; figure of the earth and isostasy, **29**, 193; **30**, 290.
Headen, W. P., phosphorescent calcites, **21**, 301; brown artesian waters of Costilla Co., Colo., **27**, 305.
Heat of combination of acidic oxides with sodium oxide, Mixer, **26**, 125; **27**, 229, 393; **28**, 103; **29**, 488; **30**, 193.
 — of combustion of acetylene, Mixer, **22**, 13; of silicon, etc., **24**, 130.
 — of formation of metallic oxides, Mixer, **30**, 193.
 — of oxidation of chromium, Mixer, **26**, 125; of tin, **27**, 232; of molybdenum, etc., **29**, 488; of tin, **27**, 232; of titanium, **27**, 393.
Heath, F. H., determination of copper, **24**, 65; of arsenic and antimony, **25**, 513.
Heating effects of Röntgen rays in different metals, Bumstead, **21**, 1; **25**, 209.
Heineman, T. W., Physical Basis of Civilization, **26**, 241.
Helium, see **CHEMISTRY**.
Henderson, W. E., Chemistry, **23**, 384.
Heredity, Mendel's Principles, Punnett, **24**, 508; Bateson, **27**, 491; **28**, 84.
 — work on, Johannsen, **28**, 85.
Hershey, O. H., Western Klamath stratigraphy, **21**, 58.
Herter, C. A., Bacterial Infections of the Digestive Tract, **24**, 91.
Hertz's photoelectric effect, Bloch, **29**, 189.
Hidden, W. E., yttracrasite, **22**, 515.
Hilgard, E. W., peculiarities of rock-weathering, **21**, 261; work on soils, noticed, **22**, 468.
Hileman, A., alkalimetric estimation of silicon fluoride, **22**, 329; estimation of fluorine iodometrically, **22**, 383.
Hill, J. W., esters of halogen substituted acids, **30**, 72.
Hillebrand, W. F., new mercury mineral from Texas, **21**, 85; vanadium sulphide patronite, etc., from Peru, **24**, 141; Texas mercury minerals, **24**, 259; plumbojarosite, **30**, 191; mose-

- site, new mineral from Texas, 30, 202.
- Himalaya Mts.** and Tibet, Burard and Hayden, 27, 189.
- Hintze, C.**, Mineralogie, 21, 257; 23, 72; 25, 265; 27, 265; 30, 89.
- Hoadley, G. A.**, Physics, 27, 339.
- Hobbs, W. H.**, configuration of rock floor of New York, 21, 182; features formed at the time of earthquakes, 23, 245; seismic geology, 23, 309; Theory of Earthquakes, 25, 259, 354; 30, 424.
- Höber, R.**, Physikalische Chemie, 23, 158.
- Hofmeister, F.**, Beiträge zur chemischen Physiologie, 21, 337; 22, 540; 24, 91; 25, 81; 26, 520.
- Holland, T. H.**, Mineral Resources of India, 28, 196.
- Holm, T.**, *Ceanothus Americanus*, 22, 523; studies in the Cyperaceæ, XXV, 23, 422; *Ane-monella thalictroides*, 24, 243; *Isopyrum biternatum*, 25, 133; North American species of stellaria, 25, 315; studies in the Cyperaceæ, XXVI, 26, 478.
- Holmes, S. J.**, Biology of Frog, 22, 190.
- Holtermann**, Climate and Plant Structure, 23, 469.
- Homo Heidelbergensis**, Schoeten-sack, 27, 416.
- Hopkins, C. G.**, Soil Fertility, 30, 158.
- Hopkins, N. M.**, Electro-Chemistry, 21, 249.
- Horse**, evolution of, Lull, 23, 161.
— new Miocene, Loomis, 26, 163; Douglass, 27, 94.
— skeleton of Arab, Osborn, 24, 380.
- Houard, C.**, les Zoocécidies des Plantes d'Europe, 28, 506.
- Hough, T.**, Human Mechanism, 22, 549; Physiology, 24, 448.
- Housum, C. R.**, action of dry ammonia, 24, 479.
- Howard, K. S.**, Estacado meteorite, 21, 186; 22, 55; Elm Creek aërolite, 23, 379.
- Howe, E.**, red beds of southwestern Colorado, 21, 328; geology of the Isthmus of Panama, 26, 212.
- Howell, E. E.**, Williamstown, Ky., meteorite, 25, 49; Ainsworth meteorite, 25, 105.
- Hubbard, G. D.**, terraces in south-eastern Ohio, 25, 108; ancient finger lakes in Ohio, 25, 239.
- Hubbard, J. L.**, use of succinic acid, 23, 211; esterification of succinic acid, 23, 368.
- Hubert, H.**, Dahomey Mission, 26, 515.
- Hudson river**, buried channels, Kemp, 26, 301.
- Huene, F. R. von**, Triassic reptile, *Hallopus*, 25, 113.
- Hull, A. W.**, initial velocities of the electrons, 28, 251.
- Human Body and Health**, Davison, 29, 92.
- Hunt, W. F.**, sulphur and celestite in Michigan, 21, 237.
- Hunter, G. W.**, Biology, 24, 448.
- Huntington, E.**, glacial period in non-glaciated regions, 25, 353.
- Hutchins, C. C.**, new declination instrument, 28, 260; new method of measuring light efficiency, 28, 529.
- Hyde, J. E.**, desiccation conglomerates, 25, 400.
- Hydrolysis** of salts of iron, etc., Moody, 22, 76; of ammonium salts, Moody, 22, 379.
- Hygiene**, Personal, Woodhull, 22, 94.
- Hyperbolic Functions**, Becker and Van Orstrand, 29, 199.
- Hypsometry**, Hayford and Pike, 28, 87.

I

- Ice-age**, Alps in, Penck and Brückner, 25, 84; 27, 341.
— Lower-Huronian, Coleman, 23, 187.
— Permian, India, Koken, 26, 165.
- Ice-flood hypothesis**, Andrews, 30, 86.
- Ice-movement** and erosion in Adirondacks, Miller, 27, 289.
- Ice-sheet**, Montana lobe of Keewatin, Calhoun, 22, 468.
— Wisconsin, recession of, Carney, 23, 324; 25, 217.
- Idaho**, geology and ore deposits, Ransome and Calkins, 27, 90.
- Iddings, J. P.**, Rock Minerals, 23, 152; Igneous Rocks, 28, 502.

- Igneous** injection and mountain building, Daly, **22**, 195.
 — intrusion, mechanics of, Daly, **26**, 17.
 — Rocks, Harker, **28**, 503; Iddings, **28**, 502.
 — See **ROCKS**.
Ihering, H. von, Archhelenis and Archinotis, **26**, 513.
Illinois Geol. Survey, see **GEOLOG. REPORTS**.
 — lower Paleozoic stratigraphy, Savage, **25**, 431.
 — Ordovician and Silurian formations, Savage, **28**, 509.
 — University, bulletins, **23**, 399; **30**, 292.
Immuno-Chemistry, Arrhenius, **25**, 81.
India, Board of Scientific Advice, report, **24**, 508.
 — commercial products, Watt, **27**, 417.
 — geology, Vredenburg, **25**, 264.
 — geological survey, **24**, 181.
 — Mineral Resources, Holland, **28**, 196.
 — Permian in, Koken, **26**, 165.
Indiana Geol. Survey, see **GEOLOGICAL REPORTS**.
Indians, Handbook of American, Hodge, **24**, 91.
Influence Machines, Schaffers, **28**, 79.
Ingersoll, E., Life of Animals, **22**, 191.
Insects, Work on Fossil, Handlirsch, **21**, 468; **22**, 349; **23**, 311; **24**, 447; **25**, 264; **26**, 584; **27**, 263.
 — Permian, Sellards, **22**, 249; **23**, 345; **27**, 151.
 — Tertiary, Cockerell, **23**, 285; **25**, 51, 227, 309; **26**, 69; **27**, 53, 381; **28**, 283; Rohwer, **28**, 533; Wickham, **26**, 76; **28**, 126; **29**, 47.
 — See **Zoology**.
Interference figures under the microscope, Wright, **22**, 19; **26**, 536.
 — phenomena, Hauswaldt, **27**, 490.
Interferometry, use of grating in, Barus, **30**, 161.
Intrusion, igneous, mechanics of, Daly, **22**, 195; **26**, 17.
Invertebrates, Guide to, Boston Society Natural History, Sheldon, **21**, 336, 475.
 — See **GEOLOGY**.
Ion, new Journal, **27**, 98.
Ionium, new radio-active element, Boltwood, **24**, 370; **25**, 289, 365; Marckwald and Keetmann, **25**, 347.
Ionization of air, effect of dust and smoke on, Eve, **29**, 552; periodicity of, Wood and Campbell, **23**, 224.
 — and electric convection, Amduzzi, **23**, 463.
 — of gases, Rausch, **27**, 187.
 — of the ocean atmosphere, Eve, **23**, 224.
 — produced by alpha rays, Wheelock, **30**, 233.
Ionized Air, effect of magnetic field, Blanc, **25**, 348.
Ions, decay in the fog chamber, Barus, **23**, 460; in dust-free air, Barus, **22**, 136.
 — Electrons and Corpuscles, Abraham and Langevin, **21**, 466.
 — in air, recombination of, Bragg and Kleeman, **21**, 399.
Iowa, Devonian fishes, Eastman, **27**, 415.
 — geol. survey, see **GEOLOGICAL REPORTS**.
Iron, cementation by charcoal, Guillet and Griffiths, **28**, 409.
 — Chem. Analysis, Blair, **26**, 511.
 — shale from Canyon Diablo meteorite, Farrington, **22**, 303.
 — See **Meteorite**.
Islay, geology, Wilkinson, Teall and Peach, **24**, 503.
Isostasy, Hayford on, **22**, 185; **29**, 193; **30**, 290.

J

- Jackson, C. L.**, obituary notice of Wolcott Gibbs, **27**, 253.
Jahrbuch für Mineralogie, etc., **24**, 92.
Japan, chalcopyrite crystals, Ford, **23**, 59.
 — Imperial Agricultural Station, **22**, 94.
Japanese Earthquake Investigation Committee, **23**, 322; **24**, 90; **26**, 240.
Jenney, W. P., great Nevada meteor of 1894, **28**, 431.
Johannsen, A., Key for Rock-forming Minerals, **25**, 599; Rock-forming Minerals, **27**, 490; petrographic microscope improvements, **29**, 435.

- Johns Hopkins** circular, No. 2, 29, 362.
- Johnson, B. L.**, geology of Iron Mine Hill, R. I., 25, 1.
- Johnson, J. P.**, stone implements of So. Africa, 23, 465.
- Jointing**, dodecahedral, Lahee, 29, 169.
- Joly, J.**, Radio-activity and Geology, 29, 83.
- Jones, A. T.**, Practical Physics, 25, 452.
- Jones, H. C.**, Electrical Nature of Matter, 21, 465; Physical Chemistry, 24, 440; 29, 264; absorption spectra of solutions, 28, 78.
- Jordan, D. S.**, Evolution and Animal Life, 24, 449.
- Jupiter**, surface of, 25, 267.
- Jutland**, moraines, Ussing, 25, 84.
- K**
- Kahlenberg, L.**, Chemistry, 28, 494.
- Kansas**, University, bulletin, 29, 560.
— geological survey, 29, 268.
- Kayser**, Handbuch der Spectroscopie, 25, 522; 30, 349.
- Keller, A. G.**, Physical and Commercial Geography, 30, 158.
- Keller, O.**, die antike Tierwelt, 30, 88.
- Kellogg, V. L.**, Evolution and Animal Life, 24, 449.
- Kelly, H. A.**, Zoology, 22, 476.
- Kemp, J. F.**, buried channels of Hudson river, 26, 301.
- Kentucky**, lead, zinc and fluor-spar deposits, Ulrich and Tanager Smith, 21, 84.
— upper Ordovician rocks, Nickles, 22, 348.
- Kepner, W. A.**, Animal Histology, 27, 97.
- Keuka Valley**, wave-cut terraces, Carney, 23, 325.
- Keyes, C. R.**, significance of certain unconformities, 21, 296; Dakotan series of New Mexico, 22, 124; aggraded terraces of the Rio Grande, 24, 467.
- Khartoum**, Wellcome Research Laboratories, 23, 155; 29, 91.
- Kindle, E. M.**, Silurian fauna in Western America, 25, 125; diatomaceous dust on the Bering Sea ice, 28, 175; section at Cape Thompson, Alaska, 28, 520.
- Kip, H. Z.**, determination of the hardness of minerals, 24, 23.
- Klamath** stratigraphy, Hershey, 21, 58.
- Knebel, W. von**, Höhlenkunde, 21, 473.
- Knight, C. W.**, pseudo-leucite, Yukon, T., 21, 286; re-formation of soda-leucite, 21, 294.
- Knopf, A.**, new boron minerals, 25, 323.
- Knowlton, F. H.**, Jurassic flora of Oregon, 30, 33.
- Knuth, P.**, Blüten-biologie, 27, 96.
- Köhler, P. O.**, Entstehung der Kontinente, 26, 238.
- Koken, E.**, Indian Permian, 26, 165.
- Kontinente**, Entstehung, Köhler, 26, 238; Entwicklung, Arldt, 26, 512.
- Korea**, Journeys in, Koto, 28, 504.
- Korn, A.**, Elektrische Fernphotographie, 24, 82.
- Kraemer, H.**, Botany, 26, 586.
- Kraft, Reyer**, 27, 272; 29, 560.
- Kraus, E. H.**, sulphur and celestite in Michigan, 21, 237; datolite from Westfield, Mass., 22, 21; iodyrite from Tonopah and Broken Hill, 27, 210.
- Krystallographie**, Chemische, Groth, 22, 89; 23, 153; 27, 265.
— Physikalische, Groth, 21, 185; Sommerfeldt, 24, 381.
- Kunz, G. F.**, production of Precious Stones in 1904, 21, 187; forms of Arkansas diamonds, 24, 275.
- Kunz, J.**, electromagnetic emission theory of light, 30, 313.
- L**
- Lacroix, A.**, Mt. Pelée after its eruptions, 26, 400; Minéralogie de la France, 30, 92; les Roches alcalines de Tahiti, 30, 360.
- Ladenburg, A.**, History of Chemistry, 23, 306.
- Lagunari**, Ricerche, 25, 89; 26, 520.
- Lahee, F. H.**, dodecahedral jointing, 29, 169.
- Lakes**, Alpine Swiss, Bourcart, 22, 468.

- Lakes**, divided in western Minnesota, Griggs, 27, 388.
 — finger, in Ohio, Hubbard, 25, 239.
Lamb, A. B., Thermodynamics, 26, 92.
Lambe, L. M., fish fauna of the Albert shales, 28, 165.
Lampard, H., celestite in Canada, 21, 188.
Lane, A. C., Shepard on underground waters of Missouri, 25, 452.
Langevin, P., Ions, Electrons and Corpuscles, 21, 466.
Langley, R. W., barium in rocks, 26, 123; determination of columbium and tantalum, 30, 393, 401.
Langley, Samuel Pierpont, obituary notice, Abbe, 21, 321.
Lapparent, A. de, Géologie, 21, 401.
Laramie, use of term, Veatch, 24, 18; Peale, 28, 45.
Larmar, J., Memoir and Correspondence of Sir G. G. Stokes, 24, 81.
Larsen, E. S., optical study of diopside, etc., 27, 28; quartz as a geologic thermometer, 27, 421; relation between the refractive index and density of crystallized silicates, 28, 263.
Latreille, life of, Nussac, 23, 469.
Lawson, copper deposits of Nevada, 22, 467.
Lawton, E. E., bands in the spectrum of nitrogen, 24, 101.
Le Bon, G., Evolution of Forces, 26, 579.
Lee, W. T., lower Paleozoic rocks of New Mexico, 26, 180.
Leffmann, H., Allen's Commercial Organic Analyses, 29, 263.
Lehigh University, Astronomical papers, Ogburn, 24, 283.
Leidy, Joseph, Memorial, 21, 338.
Leighton, H., Clay-Working Industry, 28, 563.
Lenher, V., magnacite from Wisconsin, 23, 287.
Leverett, F., weathering and erosion as time measures, 27, 349.
Levin, M., absorption of α -rays from polonium, 22, 8.
Lewis, J. V., Palisade diabase of New Jersey, 26, 155.
Library of Congress, 23, 158; 25, 364; 27, 269; 29, 275.
Lichtbogen als Wechselstromerzeuger, Wagner, 30, 350.
Life and Matter, Lodge, 21, 338.
Light, absorption of, Miller and Houston, 23, 62.
 — deviation by prisms, Uhler, 27, 223.
 — efficiency, method of measuring, Hutchins, 28, 529.
 — electromagnetic emission theory, Kunz, 30, 313.
 — Gibbs' geometrical theory of reflection of, Ewell, 24, 412.
 — for microscope, Wright, 27, 98, 195.
 — ozone and ultra-violet, Bahr, 30, 348.
 — sterilization, by ultra-violet, Daguerre, 30, 414.
 — and Sound, Franklin and Macnutt, 29, 82.
Lightning discharges, after glow from, Walter, 21, 173.
Lime-silica series of minerals, Day and Shepherd, 22, 265; Allen and White, 27, 1.
Lindgren, W., copper deposits of Arizona, 21, 332; Cripple Creek, 23, 466.
Linnaeus, 200th anniversary of birth, 23, 396; Correspondence of, Fries, 29, 200; Memorials of, 24, 508; works, Suringar, 26, 168.
Linville, H. R., Zoology, 22, 476.
Lisboa, M. A. R., faceted pebbles of Brazil, 23, 9.
Living matter, Dynamics, Loeb, 21, 479.
Lodge, O., Life and Matter, 21, 338; Electrons, 23, 462.
Loeb, J., Dynamics of Living Matter, 21, 479.
Long, J. H., Physiological Chemistry, 28, 555.
Loomis, F. B., Wasatch and Wind River primates, 21, 277; fossil bird from the Wasatch, 22, 481; Wasatch and Wind River rodents, 23, 123; origin of Wasatch deposits, 23, 356; lower Miocene Rhinocerotidae, 26, 51; new horse from, 26, 163; turtles from the Upper Harrison beds, 28, 17; genus *Stenomylus*, 29, 297; new genus of peccaries, 30, 381.
Lorentz-FitzGerald hypothesis, Bumstead, 26, 493.
Lösungen, Feste, Bruni, 27, 262.

- Lotka, A. J.**, Mode of growth of material aggregates, **24**, 199, 375.
- Loughlin, G. F.**, granites and metamorphic sediments in Rhode Island, **29**, 447.
- Low, A. P.**, Cruise of the Neptune, **23**, 307.
- Lowell, P.**, Evolution of Worlds, **29**, 199.
- Luftelektrizität**, Gockel, **28**, 77.
- Lull, R. S.**, new name for the genus *Ceratops*, **21**, 144; evolution of the horse family, **23**, 161; Triassic reptile *Hallopus*, **25**, 113; evolution of the elephant, **25**, 169; Ceratopsian Dinosaurs, **25**, 387; Ceratopsia, **26**, 98; Dinosaurian distribution, **29**, 1; restoration of Paleolithic man, **29**, 171; armor of *Stegosaurus*, **29**, 201; *Stegosaurus ungulatus* Marsh, restoration, **30**, 261.
- Lunar and Hawaiian physical features**, Pickering, **23**, 228.
- M**
- MacKenzie, K. G.**, natural naphtha from Cuba, **29**, 439.
- MacNutt, B.**, Physics, **25**, 258; Light and Sound, **29**, 82.
- Magma**, crystallization, Fenner, **29**, 217.
- Magmatic stoping**, etc., Daly, **26**, 17.
- Magnesium** metasilicates, Allen and White, **27**, 1.
- Magnetic compounds of manganese and boron**, **24**, 80.
- disturbances and the genesis of petroleum, Becker, **28**, 499.
- field and coronal streamers, J. Trowbridge, **21**, 189.
- fields on the resistance of electrolytes, Berndt, **24**, 442.
- forces, effect on moon's motion, Brown, **29**, 529.
- permeabilities, etc., Peirce, **27**, 273.
- pole, South, **26**, 589.
- properties of Norway iron, Peirce, **28**, 1; of steel, Peirce, **27**, 273.
- relations of powdered iron, Trenkle, **21**, 465.
- rotation, Meyer, **29**, 82.
- tables for United States, 1905, Bauer, **27**, 263.
- Magnetism**, Earth's, principal facts, **27**, 348.
- permanent, of copper, Gray and Ross, **27**, 263.
- terrestrial, Birkeland, **29**, 272.
- Magnetization** by rapidly oscillating currents, Madelung, **21**, 80.
- Magneto- und Electro-Optik**, Voigt, **26**, 579.
- Maldives and Laccadives**, fauna, etc., Gardiner, **23**, 24.
- Mallet, J. W.**, meteorite from Coon Butte, Arizona, **21**, 347.
- Mammalian migrations**, Europe and N. America, Matthew, **25**, 69, 154.
- Man in the Light of Evolution**, Tyler, **27**, 419.
- Heidelberg, Schoetensack, **27**, 416.
- restoration of Paleolithic, Lull, **29**, 171.
- Mann, G.**, Chemistry of the Proteids, **21**, 407.
- Manometer**, Amagat, Koch and Wagner, **29**, 189.
- Mansfield, G. R.**, Roxbury conglomerate, **23**, 67.
- Manila**, Bureau of Science, **23**, 322.
- Maps**, geological, see **Geological**.
- Marble**, Elastic constants, Adams and Coker, **22**, 112; flow of, **29**, 465.
- Marignac, J.-C. Galissard**, complete works, Ador, **23**, 460.
- Marins**, les Dépôts, Collet, **26**, 242.
- Mars**, temperature, Lowell, **23**, 471.
- et ses Canaux, Lowell-Moyen, **28**, 565.
- Martin, G.**, Affinities of Elements and Compounds, **21**, 79; Practical Chemistry, **24**, 440.
- Martinique and St. Vincent**, volcanic eruptions, Anderson and Flett, **27**, 89; Mt. Pelée, Lacroix, **26**, 400.
- Maryland Conservation Commission**, **30**, 423.
- Geol. Survey, see **GEOLOGICAL REPORTS**.
- Meso-Silurian deposits, Prouty, **26**, 563.
- Pennsylvania boundary, resurvey, **30**, 422.
- Weather service, **26**, 100; **30**, 430.

- Maryott, C. H.**, halogens in benzol derivatives, 30, 378.
- Massie, W. W.**, Wireless Telegraphy, 27, 406.
- Materia Radiante**, La, Righi, 28, 77.
- Material aggregates**, mode of growth, Lotka, 24, 199, 375.
- Matter**, composition of, Mulder, 27, 261.
- Evolution of Living Purpose, Macnamara, 30, 293.
- Corpuscular Theory, Thomson, 26, 578.
- Electrical nature of, Jones, 21, 465.
- Matthew, W. D.**, Lower Miocene fauna from So. Dakota, 24, 379; mammalian migrations, 25, 69, 154; carnivora and insectivora of the Bridger Basin, 28, 500; Pliocene fauna from Nebraska, 28, 500.
- Maury, C. J.**, genesis of Fulgur, 27, 335.
- Mawson, D.**, Geology of the New Hebrides, 21, 403.
- Maxson, R. N.**, colorimetric determination of gold, 21, 270.
- Mayow**, Medico-physical Works, 25, 533.
- Mazama**, 21, 260.
- McAdie, A.**, units in aero-physics, 30, 277.
- McClung, R. K.**, conduction of electricity through glass, etc., 29, 190.
- McCoy, H. N.**, radio-activity of thorium compounds, 21, 433; preparation of urano-uranic oxide, 26, 521.
- McGregory, J. F.**, Chemical Analysis, 28, 554.
- McIntosh, W. C.**, British Anne-lids, 25, 530.
- McPherson, W.**, Chemistry, 23, 384.
- Mechanics**, Crew, 26, 580; Franklin and MacNutt, 25, 166; Hancock, 28, 78; Merrill, 21, 260.
- Meier, W. H. D.**, Plant Study, 27, 345.
- Melting point determination**, White, 28, 453; methods at high temperatures, White, 28, 474; Sosman, 30, 1.
- of metals, see **Metals**.
- Melting point of platinum**, Sosman, 30, 3.
- Mendelism**, Punnett, 24, 508.
- Mendel's Principles of Heredity**, Bateson, 27, 491; 28, 84.
- Mendenhall, W. C.**, geology of Copper River region, Alaska, 21, 82.
- Mercalli, G.**, Active Volcanoes of the Earth, 24, 282.
- Merriam, J. C.**, Tertiary formations of the John Day region, 24, 377; Triassic Ichthyosauria, 27, 91.
- Merrill, G. P.**, new meteorite, Scott Co., Kansas, 21, 356; History of American Geology, 21, 467; Rocks and Rock-weathering, 23, 150; meteorite from Selma, Alabama, 23, 244; Meteor Crater of Arizona, 25, 265; composition of stony meteorites, 27, 469.
- Merwin, H. E.**, alamosite from Mexico, 27, 399; peroxidized titanium solutions, 28, 119; connellite and chalcophyllite, Arizona, 28, 537.
- Messina earthquake**, Perret, 27, 321.
- Metallography**, Goerens, 25, 524; Elements of, Rurer, Mathewson, 28, 554.
- Metals**, boiling points, Greenwood, 28, 553; Krafft, 27, 336; Moissan, 21, 325; Ruff and Johannsen, 21, 78.
- internal temperature gradient, Serviss, 24, 451.
- melting points, Day and Clement, 26, 461; Day and Sosman, 29, 141; Greenwood, 28, 553; Sosman, 30, 1.
- Meteor crater**, see **Arizona**.
- Meteorite, iron**, Ainsworth, Nebraska, Howell, 25, 105.
- Australian, Smith, 30, 264.
- Canyon Diablo, iron shale from, Farrington, 23, 303.
- Quinn Canyon, Nevada, Jenney, 28, 431.
- Rodeo, Mexico, Farrington, 21, 86.
- Shrewsbury, Pa., Farrington, 29, 350.
- Williamstown, Kentucky, Howell, 25, 49.
- pallasite, of South Bend, Farrington, 22, 93.

- Meteorite stone**, Coon Butte, Arizona, Mallet, **21**, 347.
 — Georgia, Merrill, **29**, 368.
 — Elm Creek, Kansas, Howard, **23**, 379.
 — the Estacado, Howard, **21**, 186; **22**, 55; analysis, Davison, **22**, 59.
 — Hendersonville, N. C., Merrill, **23**, 393.
 — Modoc, Scott Co., Kansas, Merrill, **21**, 356.
 — Selma, Alabama, Merrill, **23**, 244.
 — Shelburne, Ontario, Borgström, **21**, 86; Farrington, **22**, 93.
Meteorites, alloys in, Guertler, **30**, 413.
 — Amer. Museum, Foyer collection, New York, **25**, 266.
 — Collection of Berlin University, Klein, **22**, 90.
 — Canyon Diablo, Meteor Crater, or Coon Butte, see **Arizona**.
 — from Columbia, H. A. Ward, **23**, 1.
 — formation of, **22**, 431.
 — in the Museum of Nat. History, Paris, Meunier, **28**, 84.
 — Rochester collection, Howard, **29**, 368.
 — times of fall, Farrington, **29**, 211.
Meteorological elements of United States and solar radiation, Bigelow, **25**, 413.
 — investigations, Bigelow, **29**, 277; **30**, 115.
Metric system, Perkin, **25**, 364.
Mexico, eruptive rocks, Guild, **22**, 159.
 — Tenth International Geological Congress, **22**, 463.
Michael, H. A., Studies in Plant Chemistry, etc., **24**, 90.
Michelson's ether research, Kohl, **27**, 338.
Michigan, biological survey, **29**, 268.
 — geol. survey, see **GEOLOGICAL REPORTS**.
 — peat in, Davis, **25**, 456.
 — sulphur and celestite in, Kraus and Hunt, **21**, 237.
 — water supplies, **23**, 323.
Micrology, Animal, Guyer, **23**, 156.
Microscope, artificial daylight for use with, Wright, **27**, 98, 195.
Microscope, interference figures under the, Wright, **22**, 19.
 — petrographic, improvements, Johannsen, **29**, 435.
 — new, Wright, **29**, 407; new ocular for use with, Wright, **29**, 415.
 — polarization, Weinschenk, **22**, 89.
Microscopical Technique, Rawitz, **25**, 88.
Miers, H. A., phenocrysts in igneous rocks, **21**, 182.
Miller, W. G., cobalt-nickel arsenides of Temiskaming, **21**, 256.
Miller, W. J., ice-movement and erosion in Adirondacks, **27**, 289.
Millikan, R. A., Physics, **22**, 345, 346; Electricity, etc., **28**, 79.
Mills, J., Electricity, etc., **28**, 79.
Milne, W. J., Algebra, **27**, 272.
Mineral Catalogue, Foote, **27**, 490.
 — Characters, Richards, **23**, 232.
 — Collections, Prendler, **27**, 343.
 — Resources of India, Holland, **28**, 196; of the United States, 1906, **25**, 264; of Virginia, Watson, **28**, 82.
 — survey of Ceylon, report, Parsons, **28**, 81.
 — tables, Penfield, **24**, 448; Schroeder van der Kolk, **22**, 90.
Mineralogia Groenlandica, Bög-gild, **23**, 320.
Mineralogie, Hintze, **21**, 257; **23**, 72; **25**, 265; **27**, 265; **30**, 89.
Mineralogy, Second Appendix to Dana's System, Dana and Ford, **28**, 196.
 — etc., Elements, Moses and Parsons, **28**, 583.
 — of France, Gonnard, **22**, 90; Lacroix, **30**, 92.
 — of Japan, **21**, 405.
 — Optical, N. H. and A. N. Winchell, **27**, 412.
Minerals of Arizona, Blake, **28**, 82.
 — of composition $MgSiO_3$, formation, Allen, Wright and Clement, **22**, 385; Allen and White, **27**, 1.
 — determination of hardness, Kip, **24**, 23; Parsons, **29**, 162.
 — of Greenland, Bög-gild, **23**, 320.
 — Handbook of, Butler, **26**, 167.
 — Key for Rock-forming, Johannsen, **25**, 599.
 — lime-silica series, formation, Day and Shepherd, optical study, Wright, **22**, 265.

Minerals of Lyon Mt., N. Y.
Whitlock, 23, 232.

— measurement of the optic axial angle of, Wright, 24, 317.

— mercury, from Texas, Hillebrand and Schaller, 24, 259; 29, 367.

— radium, etc., in, 22, 1, 4. See **Radio-active.**

— reproduction, Tchiruwinsky, 23, 395.

— Rock-forming, Johannsen, 27, 490.

— of Southern Norway, Brögger, 24, 282.

— Tables of, Penfield, 24, 448.

MINERALS.

Alaite, Central Asia, 30, 360.

Alamosite, Mexico, 27, 399.

Albite, 24, 255. Actinolite, 23,

32. Amphibole, composition,

23, 23; formation, 22, 403, 435;

from Linosa, 26, 187. Anhydrite,

Kansas, 29, 260; twin

crystals, 24, 487. Anophorite,

Baden, 30, 90. Anorthite,

soda, 29, 64. Antlerite, 30,

311. Argentite, Colorado, 25,

507. Argyrodite, Bolivia, 23,

20. Arizonite, Arizona, 28,

353. Arsenopyrite, New Jer-

sey, 29, 177. Asbestos, Can-

ada, 21, 255. Astrophyllite,

Massachusetts, 29, 215. Ata-

camite, twin crystals, Chili,

30, 16.

Barbierite, 30, 358. Barite,

Maryland, 21, 369. Bellite,

Tasmania, 22, 469. Bemen-

titite, New Jersey, 29, 182.

Benitoite, California, 24, 448;

crystal form, 27, 398. Beryl

crystals, 22, 217; presence of

alkalies in, 30, 128; water in,

26, 115. Bismite, 29, 173.

Bityite, Madagascar, 30, 90.

Blödite, Chile, 26, 347. Bra-

voite, Peru, 24, 151. Brochan-

titite, Chili, 30, 24. Brugnate-

lite, 30, 90.

Calamine crystals, Organ Mts.,

N. M., 28, 185. Calcite crys-

tals, Kelly's Island, Lake

Erie, 28, 186; New Jersey,

24, 426; phosphorescent, 21,

301. Calomel, Texas, 24, 273.

Canfieldite, Bolivia, 23, 21.

Carlosite, California, 24, 448.

Carnegieite, 29, 52. Carno-

MINERALS.

tite, radio-activity, 25, 280.

Celestite, Canada, 21, 188;

Kansas, 29, 261; Michigan,

21, 237. Chalcophyllite, Ari-

zona, 28, 537. Chalcopyrite

crystals, Japan, 23, 59. Chal-

mersite, Brazil, 24, 255. Chi-

astolite, So. Australia, 24, 183.

Chlorite, 24, 255. Chlormang-

anokallite, 22, 470. Chloro-

phane, phosphorescence, 23,

142. Cinnabar crystals, China,

26, 517. Cobaltite, Northern

Ontario, 21, 275. Connellite,

Arizona, 28, 537. Copper,

crystallized, Arizona, 23, 232.

Corundum, N. Carolina, 21,

253; pseudomorph after, from

Perth, Ontario, 22, 52. Covell-

ite, Colorado, 29, 358. Cuspi-

dine, New Jersey, 29, 185.

Dahlite, 30, 309. Datolite, New

Jersey, 28, 187; 29, 185; West-

field, Mass., 22, 21. Deloren-

zite, Italy, 28, 83. Diamond,

transformation into graphite,

29, 362. Diamonds in Africa,

27, 489; Arkansas, 24, 275;

in Kimberlite, 25, 87. Diop-

side, 27, 1; water in, 26, 115.

Dolomite, Kansas, 29, 261.

Doughtyite, Colorado, 22, 470.

Edenite, 23, 38. Eglestonite,

Texas, 24, 271. Enargite,

Colorado, 29, 358. Enstatite,

formation, 22, 397. Epidote,

pyrogenetic, Butler, 28, 27.

Evansite, Idaho and Alabama,

24, 155.

Feldspar from Linosa, 29, 52;

decomposition, 23, 231; deter-

mination of, 21, 361. Fluorite,

Kentucky, 21, 84; New Jer-

sey, 29, 177; studies in, 21,

405. Fosterite, formation and

optical constants, 22, 390.

Franklinite, New Jersey, 29,

180. Friedelite, New Jersey,

29, 183.

Gadolinite, Australia, 23, 464.

Gageite, Franklin, N. J., 30,

283. Gahnite, Mass., 26, 584;

New Jersey, 29, 179. Gedrite,

Canada, 25, 509. Gehlenite,

Mexico, 26, 545. Georgiade-

site, Italy, 28, 83. Giorgiosite,

22, 469. Glaucochroite, New

Jersey, 29, 181. Goethite,

MINERALS.

Nova Scotia, 29, 235. Gold nuggets from New Guinea, 24, 505. Gold and silver, production in 1906, 25, 156. Goldfieldite, Nevada, 29, 85. Gorceixite, Brazil, 24, 182. Gypsum, Kansas, 29, 261. Halite, Kansas, 29, 261. Halerite, 30, 90. Harttite, Brazil, 24, 182. Hastingsite, Ontario, 28, 540. Hellandite, Norway, 24, 182. Hematite, 24, 255; artificial crystals, 24, 485. Heterolite, New Jersey, 29, 190. Hillebrandite, Mexico, 26, 551. Hollandite, 27, 344. Hornblende, 23, 39. Hortonolite, 25, 35. Hudsonite, 23, 45. Hulsite, Alaska, 25, 325; New Jersey, 29, 543. Humite, New Jersey, 29, 185. Hyalosiderite, R. I., 25, 19. Hydrogiobertite, new occurrence, 30, 189. Ilvaite, California, 26, 14. Ioddyrite, Nevada, 27, 210; New South Wales, 27, 212. Irvingite, Wisconsin, 23, 451. Jadeite, Upper Burma, 27, 343. Joaquinite, 30, 90. Kaersutite, Linosa and Greenland, 26, 187. Kertschenite, 22, 470. Kleinite, Texas, 22, 469; 24, 261. Kröhnkite, Chile, 26, 342. Kupfferite, formation, 22, 406; water in, 26, 111. Labradorite, Mexico, 30, 151. Leucite, Knight, 21, 286, 294. Leucophœnicite, New Jersey, 29, 185. Ludwigite, Montana, 30, 146. Malacone, argon and helium from, 23, 141. Manganosite, New Jersey, 29, 178. Mangantantalite, Maine, 24, 154. Marignacite, Wisconsin, 23, 207. Mercury mineral, new Terlingua, Texas, 21, 85; native, Texas, 24, 274. Meymacite, 25, 305. Mica, Canada, 21, 405. Minguetite, France, 30, 359. Molybdite, Arizona, 23, 455; Colorado, 25, 74; composition, 23, 297. Montroydite, Texas, 24, 269. Moravite, Moravia, 22, 470. Mosesite, Texas, new, 30, 202.

MINERALS.

Nasonite, New Jersey, 29, 180. Natrochalcite, new, Chile, 26, 345. Nepouite, New Caledonia, 24, 182. Neptunite crystals, Calif., 27, 235; 28, 15. Northupite, 22, 459. Olivine in serpentine of Chester, Mass., 24, 491. Opal pseudomorphs, New South Wales, 21, 254. Orthoclase, pseudomorph, Quebec, 22, 47; twins, 26, 149. Otavite, Africa, 22, 470. Paigeite, Alaska, 25, 330; 29, 543. Parahopeite, 28, 84. Paravivianite, 22, 470. Patronite, Peru, 24, 141. Phenacite, Gloucester, Mass., 24, 252. Planchette, French Congo, 30, 91. Platinum, 23, 319. Plumbojarosite, Utah, 30, 191. Podolite, 30, 309. Powellite, Nevada, 25, 72; Texas, 25, 71. Pseudo-leucite, Yukon T., 21, 286. Pseudo-wollastonite, 21, 89; 22, 290. Purpurite, So. Dakota, 24, 152. Pyrite, 24, 254; Kansas, 29, 261; Utah, 27, 467. Pyromorphite, British Columbia, 28, 40. Pyroxene, composition, New Jersey, 29, 180; formation and properties, 22, 391; 27, 1. Quartz, formation, 22, 275; from Kansas, 29, 261; as geologic thermometer, 27, 421. Quisquite, Peru, 24, 141. Rinneite, 28, 84. Risörite, Norway, 30, 91. Rosasite, Sardinia, 30, 91. Rubies, Upper Burma, 27, 344. Ruthfordine, East Africa, 24, 181. Samsonite, 30, 91. Sapphires, synthetic, 30, 271. Siderite, 24, 253; Maryland, 21, 364. Silicomagnesiofluorite, Finland, 22, 469. Silver, Canada, 21, 256. Smaltite, Canada, 21, 256. Soda-leucite, re-formation, 21, 294. Spandite, 24, 181. Sphalerite, 24, 254. Spurrite, Mexico, 26, 547. Stellerite, 30, 359. Stelznerite, 30, 311. Stephanite, Mexico, 25, 244. Stibiotantalite, California, 22, 61. Stilpnochloran, Moravia, 22, 470. Sulphur, Michigan, 21, 237.

MINERALS.

- Taramellite, Italy, **28**, 83. Tarbuttite, **28**, 84. Terlinguaite, Texas, **24**, 270. Thorianite, **21**, 187; **25**, 521. Tremolite, **23**, 31; water in, **26**, 101. Tridymite, formation, etc., **22**, 275. Tourmaline, Elba, **24**, 157; New York, **25**, 123. Tungstite, **25**, 305. Turanite, Central Asia, **30**, 360. Tychite, **22**, 459.
- Uraninite, radio-active products, **23**, 77; **25**, 280. See **Radio-active**.
- Vashegyite, Hungary, **30**, 91. Vesuvianite, New Jersey, **29**, 184. Villiaumite, **25**, 347.
- Warwickite, composition, **27**, 179. Willemite, New Jersey, **23**, 20; **29**, 182. Wiltshireite, Switzerland, **30**, 359. Wöhlerite, **23**, 270. Wollastonite, **21**, 89; formation, **22**, 275.
- Yttrocraasite, Texas, **22**, 515.
- Zincite, New Jersey, **29**, 178. Zinnwaldite, Alaska, **24**, 158. Zoisite crystals, Chester, Mass., **24**, 249.
- Mines**, Federal Bureau, **30**, 292, 419.
- Department of, Canada, **30**, 357.
- Mining** Congress, American, **25**, 89; **28**, 87.
- Minnesota**, divided lakes, Griggs, **27**, 388.
- Mississippi** geol. survey, **27**, 264.
- Missouri**, copper deposits, Bain and Ulrich, **21**, 160.
- Devonian, Greger, **27**, 374.
- geol. Bureau, publications, **21**, 181.
- Pike County, geology, Rowley, **26**, 514.
- Shepard on underground waters, Lane, **25**, 452.
- Mixter, W. G.**, thermal constants of acetylene, **22**, 13; combustion of silicon and silicon carbide, **24**, 130; heat of combination of acidic oxides, **26**, 125; heat of oxidation of tin, **27**, 229; heat of formation of titanium oxide, **27**, 393; heat of formation of trisodium orthophosphate, etc., **28**, 103; heat of formation of molybdenum oxides, etc., **29**, 488; heat of formation

- of oxides of cobalt and nickel, etc., **30**, 193.
- Molecular** attraction, electric origin, Sutherland, **27**, 487.
- Montana**, geology of Marysville district, **24**, 85.
- Monteregian Hills**, Canada, rare rock type, Dresser, **28**, 71.
- Moody, S. E.**, hydrolysis of salts of iron, etc., **22**, 176; of salts of ammonium, **22**, 379; iodometric determination of basic alumina, **22**, 483; hydrolysis of ammonium molybdate, **25**, 77.
- Moon**, effect of magnetic and other forces on motion of, Brown, **29**, 529.
- features of, Pickering, **23**, 228.
- Moral Instruction** in Schools, Sadler, **26**, 591.
- Morgan, T. H.**, Zoology, **23**, 241.
- Morgan, W. C.**, Qualitative Analysis, **23**, 62.
- Morse, H. W.**, Chemistry, **28**, 495.
- Moses, A. J.**, Mineralogy, **28**, 563; synthetic sapphires, **30**, 271.
- Moulton, F. R.**, Astronomy, **22**, 191; tidal and other problems, **28**, 188.
- Mt. Pelée** after its Eruptions, Lacroix, **26**, 400.
- Mount Stephen** rocks and fossils, Walcott, **27**, 414.
- Mount Weather Observatory**, bulletin, **25**, 155, 532; **27**, 270, 492.
- Mountain** building and igneous injections, Daly, **22**, 195.
- Mowbray, L.**, the cahow in Bermuda, **25**, 361.
- Mumper, W. N.**, Physics, **25**, 259.
- Munroe, Chas. E.**, artificial hematite crystals, **24**, 485.

N

- Nantucket**, glacial history, Wilson, **23**, 67.
- Pleistocene deposits, Cushman, **22**, 187.
- Naphtha**, natural, from Cuba, Richardson and Mackenzie, **29**, 439.
- National Museum**, publications, **21**, 260; report June 1904, **21**, 479.
- Natural History** Essays, Renshaw, **25**, 160.

- Nature Study**, Cummings, 30, 93.
Nebraska, Pliocene fauna, Cook, 28, 500.
 — Proboscidian, Cook, 28, 183.
 — Teleoceras from the Miocene of, Olcott, 28, 403.
Neptune, cruise of, Low, 23, 307.
Nevada, geology of Tonopah mining district, Spurr, 21, 83.
 — geology and ore deposits, Ransome, 29, 85; Spurr, 23, 466.
Nervous System, Integrative Action, Sherrington, 23, 73.
Newcomb, S., Spherical Astronomy, 22, 191; fluctuations in the Sun's radiation, 26, 93.
 — obituary notice, 28, 196, 290.
New Guinea, British, geology, Maitland, 21, 404.
New Hampshire, geology of, Pirsson and Washington, 22, 439, 493.
New Haven, Conn., Lighthouse granite, Ward, 28, 131.
New Hebrides, Geology, Mawson, 21, 403.
New Jersey, Cretaceous paleontology, Weller, 25, 152.
 — — Geol. Survey, see **GEOLOGICAL REPORTS**.
 — — Palisade diabase, Lewis, 26, 155.
Newman, H., Physics, 25, 259.
New Mexico, Dakotan series, Keyes, 22, 124.
 — — lower Paleozoic formations, Gordon and Graton, 21, 390; Lee, 26, 180.
 — — Mississippian formations, Gordon, 24, 58.
 — — Mt. Taylor region geology, Shimer and Blodgett, 25, 53.
 — — ore deposits, Lindgren, et al., 30, 427.
Newton, H. D., estimation of iron, 23, 365; volumetric estimation of titanium, 25, 130; estimation of iron by potassium permanganate, 25, 343.
New York, configuration of rock floor of, Hobbs, 21, 182.
 — — Devonian history, Clarke, 26, 93.
 — — glacial waters in central, Fairchild, 27, 340.
 — — State Museum, publications, 21, 87, 181; 22, 348; 26, 403.
New Zealand Geol. Survey, see **GEOLOGICAL REPORTS**.
New Zealand, geology of the Coromandel region, 25, 526; of Parapara subdivision, 25, 83.
Niagara Falls, recession, Gilbert and Hall, 23, 226; work on, Spencer, 25, 455.
Nichols, E. L., Physics, 27, 85.
Nitrogen, properties of liquid, Erdmann, 22, 78.
 — spectrum, Lawton, 24, 101.
 — thermometer, 23, 43; do. from zinc to palladium, Day and Sosman, 29, 93; analysis of metals, Allen, 29, 93.
Nobel Prize in 1903, 22, 351; 1904, 24, 508; 1905, 25, 165; 1906, 28, 507.
Noble, L. F., geology of the Grand Canyon, Arizona, 29, 369, 497.
Noetling, F., die Entwicklung von Indoceras, 22, 349; über die Familie Lyttoniidae, 22, 349.
North America, Paleogeography of, Schuchert, 29, 552.
 — — Paleozoic platform, Ruedemann, 30, 403.
North Carolina, Building Stones, Watson and Laney, 23, 70.
 — — fishes, Smith, 25, 159.
 — — geol. survey, see **GEOLOGICAL REPORTS**.
 — — Gold Hill mining district, 30, 291.
 — — Volcanic rocks of Davidson Co., Pogue, 28, 218.
North Dakota geol. survey, 25, 457; 29, 192.
Norway, Crustacea, Sars, 21, 337.
Norwegian Aurora Polaris Expedition, Birkeland, 29, 272.
Noyes, W. A., Organic Chemistry, 25, 80; 30, 348.
Nucleation of the atmosphere, Barus, 21, 400; colloidal, Barus, 23, 202; vapor, in the lapse of time, Barus, 23, 342.
Nuclei, decay of ionized, Barus, 24, 419; and ions in dust-free air, Barus, 22, 136; of pure water, behavior, Barus, 25, 409.

O

OBITUARY.

- Abegg, R., 29, 566. Agassiz, A., 29, 464, 561. Angstrom, K. J., 29, 566. Anthony, W. A., 26,

OBITUARY.

100. Atwater, W. A., 24, 382.
 Austin, P. T., 25, 168. Ayrton, W. E., 27, 100.
 Barker, G. F., 30, 96, 225.
 Barnes, C. R., 29, 464. Beale, L. S., 21, 408. Béchamp, P. J. A., 26, 100. Becquerel, A. H., 26, 404. Berthelot, P. E. M., 23, 324. Bertrand, M., 23, 324. Bidwell, S., 29, 276.
 Blake, W. P., 30, 95. Boltzmann, L., 22, 476. Brackenbusch, L., 22, 194. Brewer, W. H., 30, 431. Brooks, W. K., 26, 591. Buller, Sir W. L., 22, 352.
 Chalmers, R., 26, 100. Curie, P., 21, 408.
 Delgado, J. F. N., 26, 404.
 Dohrn, A., 28, 508. Drude, P., 22, 352. Dwight, W. B., 22, 352.
 Fletcher, H., 28, 508. Foster, Sir M., 23, 244. Fraipont, J., 29, 566. Frazer, P., 27, 420.
 Galle, J. G., 30, 160. Gibbs, W., 27, 100, 253. Gordon, R. H., 30, 96.
 Hague, J. D., 26, 242. Hall, A., 25, 90. Hansky, A., 26, 404.
 Harrington, B. J., 25, 91. Heilprin, A., 24, 184, 284.
 Hough, G. W., 27, 196. Huggins, Sir Wm., 29, 566.
 Janssen, P. J. C., 25, 168. Johnson, S. W., 28, 292, 405.
 Kelvin, Lord, 25, 92.
 Landolt, H., 29, 566. Langley, S. P., 21, 321. Lapparent, A., 26, 100. Luedecke, O., 30, 431. Lister, A., 26, 404.
 Loewy, M., 24, 450. Loper, S. W., 29, 464.
 Mascart, E. E. N., 26, 404. Mendeléef, D. I., 23, 244.
 Mickwitz, A. von, 30, 96.
 Möbius, K. A., 26, 100. Moissan, H., 23, 324.
 Newcomb, S., 28, 196, 290.
 Nikitin, M. S., 29, 276.
 Peirce, J. M., 21, 408. Penfield, S. L., 22, 264, 353. Penhalow, D. P., 30, 431. Philippi, E., 29, 566.
 Rees, J. K., 23, 324. Rhee, W. J., 23, 324. Robinson, F. C., 30, 96. Russell, I. C., 21, 481.
 Safford, J. M., 24, 284. Schell-

OBITUARY.

- wien, E., 22, 94. Seeley, H. R., 27, 272. Shaler, N. S., 21, 408, 480. Sokolov, N., 23, 324.
 Todd, H. D., 23, 324.
 Underwood, L. M., 25, 92.
 Von Bezold, W., 23, 324. Von der Osten Sacken, Baron C. R., 22, 194.
 Ward, H. A., 22, 194. White, C. A., 30, 160. Whiteaves, J. F., 28, 508. Whitfield, R. P., 29, 464, 565.
 Young, C. A., 25, 166.
Observations Méridiennes, Bouquet, 28, 506.
Observatory, Allegheny, publications, 25, 165, 460; 26, 99; 27, 270, 420; 28, 565; 29, 368, 560; 30, 95.
 — **Astrophysical**, publications, 25, 162, 431.
 — **Harvard**, publications, 23, 75, 323; 24, 509; 25, 460; 26, 99; 27, 269, 240; 28, 565; 29, 276.
 — **Mt. Weather**, 25, 155, 532; 27, 492.
 — **United States Naval**, 21, 260; 22, 475.
 — **Washburn**, publications, 23, 323; 27, 270.
 — **Yale**, Transactions, 22, 471.
Ocean, limeless, of Pre-Cambrian time, Daly, 23, 93, 393.
Oceanography of the Pacific, Flint, 21, 333.
Occlusion of oxygen, Szivessy, 24, 442.
Ohio, ancient finger lakes, Hubbard, 25, 239; desiccation conglomerates, Hyde, 25, 400; high level terraces, Hubbard, 25, 108.
 — **Geol. Survey**, see **GEOLOGICAL REPORTS**.
Oklahoma, geology of, Gould, 22, 87.
 — **geol. survey**, 27, 339.
 — **oil and gas production**, 28, 560.
Olcott, T. F., Teleoceras from the Miocene of Nebraska, 28, 403.
Ontario, crustal warping in, Pirs-son, 30, 25.
Optic axial angle of minerals, measurement, Wright, 24, 317.
Optics, Drude, 23, 146; Meteorological, Pernter, 22, 81; 29, 362; Physical, Wood, 22, 193; Practical, Gleichen, 22, 541.

- Orangia**, Geological notes, Johnson, **29**, 558.
- Orbits** of celestial bodies, determination, Bauschinger, **21**, 478.
- Ordway, J. M.**, waterglass, **24**, 473.
- Oregon**, Jurassic flora of, Knowlton, **30**, 33.
- Mesozoic of southwestern, Diller, **23**, 401.
- Organbildende Substanzen**, Rabl, **23**, 468.
- Organism**, Science and Philosophy, Driesch, **30**, 294.
- Osann, A.**, Chemische Petrographie, **21**, 183.
- Osborn, H.**, Economic Zoology, **27**, 97.
- Osborn, H. F.**, skeleton of Arab horse, **24**, 380; Tertiary mammal horizons of America, **24**, 504; Evolution of Mammalian Molar Teeth, **25**, 264.
- Osborne, R. W.**, potassium aluminium sulphate, **24**, 167; esterification of benzoic acid, **25**, 39.
- Osborne, T. B.**, Vegetable Proteins, **30**, 294.
- Oscillatory** discharge of a polarized cell, Krüger, **23**, 63.
- Ostwald, W.**, Conversations on Chemistry, part ii, **21**, 248; Allgemeine Chemie, **22**, 460; Chemistry, **28**, 495.
- Ostwald's Klassiker der exakten Wissenschaften**, **21**, 188; **23**, 399; **25**, 89, 534; **26**, 590; **28**, 507; **29**, 464.
- Oyster**, Brooks, **21**, 88.
- Ozone**, action on metallic silver, Manchot and Kampschulte, **24**, 373; formation from oxygen, Warburg and Leithäuser, **22**, 462; gas, Ladenburg, **23**, 141; generator of Siemens, Ewell, **22**, 368.
- P**
- Pacific**, Albatross Expedition to, Agassiz, **21**, 257; **24**, 450.
- oceanography, Flint, **21**, 333.
- Palache, C.**, mineralogical notes, **24**, 249; occurrence of olivine, **24**, 491; kröhnkite, natrochalcite, etc., from Chile, **26**, 342; benitoite, **27**, 398; alamosite from Mexico, **27**, 399; conellite and chalcophyllite, Arizona, **28**, 537; mineralogy of Franklin Furnace, N. J., **29**, 177.
- Paleobotany**, see **BOTANY**.
- Paleolithic** man, Lull, **29**, 171.
- Palæontologia Universalis**, **23**, 315; **29**, 462.
- Paleogeography** of North America, Schuchert, **29**, 552.
- Paléontologie**, Annales de, Vol. I, pts. I and II, **21**, 329.
- Paleontology**, Cumings, **30**, 355; Steinmann, **26**, 240.
- See **GEOLOGY**.
- Palmer, C.**, arizonite, ferric metatitanate, **28**, 353.
- Palmer, H. E.**, detection of ferrocyanides, etc., **23**, 448; estimation of cerium, **26**, 83; ester formation, **26**, 290; estimation of thallium, **27**, 379; potassium ferricyanide in the estimation of arsenic, etc., **29**, 399; potassium ferricyanide in alkaline solutions, **30**, 141; estimation of vanadium as silver vanadate, **30**, 220.
- Panama**, geology of, Howe, **26**, 212.
- Parasitology**, **27**, 194.
- Parks, W. A.**, Lepadocystis clintonensis, Ontario, **29**, 404.
- Parsons, A. L.**, sclerometer, **29**, 162; goethite, **29**, 235.
- Parsons, C. L.**, Mineralogy, **28**, 563.
- Peale, A. C.**, application of the term Laramie, **28**, 45.
- Peat**, in Michigan, Davis, **25**, 456.
- Peckham, S. F.**, Solid Bitumens, **29**, 459.
- Pierce, B. O.**, permeabilities and reactivities for steel, **27**, 273; magnetic properties of Norway iron, **28**, 1.
- Penck, A.**, die Alpen im Eiszeitalter, **25**, 84; **27**, 341.
- Penfield, S. L.**, drawing of crystals, **21**, 206; precipitates on asbestos, **21**, 453; stibiotantalite, **22**, 61; chemical composition of amphibole, **23**, 23; Tables of Minerals, **24**, 448.
- obituary notice, Pirsson, **22**, 353.
- Pennsylvania** geol. survey, **29**, 266.
- Periodic Law**, Garrett, **28**, 554.
- Perkins, C. C.**, determination of free iodine, **28**, 33; determina-

- tion of free bromine, etc., **29**, 338; silver in the determination of molybdenum, etc., **29**, 540.
- Perkins, H. A.**, rectification effect in a vacuum tube, **25**, 485.
- Perkins, P. B.**, molecular weight of radium emanation, **25**, 461.
- Pernter, J. M.**, Meteorologische Optik, **22**, 81; **29**, 362.
- Perret, F. A.**, Messina earthquake, **27**, 321; Vesuvius, **28**, 413.
- Petercit, A. H.**, crystallized native copper, **23**, 332; cinnabar crystals from China, **26**, 517.
- Petrography**, see **ROCKS**.
- Petroleum**, genesis, Becker, **28**, 499.
- Petrology**, Hatch, **27**, 410.
- Phelps, I. K.**, use of succinic acid, **23**, 211; esterification of succinic acid, **23**, 368; preparation of formamide, **24**, 173; action of dry ammonia, **24**, 479; standards in alkalimetry and acidimetry, etc., **26**, 138, 143; esters and esterification, **26**, 243, 253, 257, 264, 267, 275, 281, 290, 296.
- and **M. A.**, use of zinc chloride, **24**, 194; preparation of acetamide, **24**, 429; esterification of benzoic acid, **25**, 39.
- Phelps, M. A.**, separation of arsenic from copper, **22**, 488.
- Philippi, W.**, Elektrische Kraftübertragung, **21**, 81.
- Philippine Islands**, Bureau of Science, Freer, **23**, 322; Weather Bureau, Algué, **23**, 76.
- *Journal of Science*, **21**, 336, 408.
- Phillips, A. H.**, gageite, Franklin, N. J., **30**, 283.
- Phosphorescence** by canal rays, Trowbridge, **25**, 141.
- power of positive rays to produce, Kunz, **24**, 499.
- Photoelectric fatigue**, Allen, **30**, 414.
- Photographic Exposure Record**, **23**, 471.
- plates, light impressions, Eykman and Trivelli, **23**, 143.
- Photometric measurements**, Tufts, **22**, 531.
- Photometry**, Liebenthal, **25**, 258.
- Phrenology**, Spurzheim and Elder, **28**, 88.
- Physical Geography**, Davis, **26**, 591.
- Laboratory, British National, Report for 1909, **30**, 82.
- measurements, Duff and Ewell, **27**, 488; **30**, 350; Sabine, **21**, 467.
- Phenomena, Modern Theory of, Righi, **21**, 328; **23**, 463.
- Physics**, Culler, **28**, 557.
- First Course in, Millikan and Gale, **22**, 345.
- Elementary, Newman, **25**, 259.
- Elements, Crew, **29**, 83; Hoadley, **27**, 339; Nichols and Franklin, **27**, 85.
- General, Crew, **26**, 241.
- Laboratory, Millikan and Gale, **22**, 346.
- New, Poincaré, **26**, 580.
- Practical, Franklin, Crawford and MacNutt, **25**, 258; Ferry and Jones, **25**, 452.
- Principles, Gage and Goodspeed, **25**, 259.
- for Schools, Adams, **27**, 339.
- Text-Book, Duff, **27**, 85; **28**, 556; Mumper, **25**, 259.
- Theoretical, Planck, **30**, 82.
- Physik**, Lehrbuch, Chwolson, **21**, 174.
- Physiologie**, Allgemeine, Verworn, **27**, 419.
- Beiträge zur chemischen, Hofmeister, **21**, 337; **24**, 91; **25**, 81; **26**, 520.
- Physiology**, Hough and Sedgwick, **24**, 448.
- Pickering, W. H.**, lunar and Hawaiian features, **23**, 228.
- Pilcomayo River**, Lange, **23**, 397.
- Pirsson, L. V.**, obituary notice of S. L. Penfield, **22**, 353; petrography of Belknap Mountains, **22**, 439, 493; geology of Red Hill, N. H., **23**, 257, 433; Rocks and Rock Minerals, **26**, 403; astrophyllite in the granite at Quincy, Mass., **29**, 215; crustal warping in Ontario, **30**, 25; artificial lava-flow and spherulitic crystallization, **30**, 97, 425.
- Plants of Connecticut**, **29**, 559.
- fossil, Seward, **30**, 356; see **GEOLOGY**.
- Tertiary, see **Colorado**.
- Plaster-plaques** for museums, Goodale, **22**, 90.
- Plate, L.**, Probleme der Artbildung, **25**, 531.

- Platinum**, melting point, see **Metals**.
 — occurrence in U. S., **23**, 319.
 — specific heat, White, **28**, 334.
Platinum-rhodium thermoelement, Sosman, **30**, 1.
Plimmer, R. H. A., Chemical Constitution of Proteins, **27**, 271.
Pogue, J. E., Jr., mineral notes, **28**, 187; ancient volcanic rocks of No. Carolina, **28**, 218.
Poincaré, L., New Physics, **26**, 580.
Polarisationsmikroskop, Weinschenk, **22**, 89.
Polariscope, Rolfe, **21**, 174.
Polarization, absence in artificial fogs, Barus, **27**, 402.
 — Fizeau's research on the change of azimuth, **24**, 498.
Polonium, alpha-rays from, absorption of, Levine, **22**, 8; retardation, Taylor, **26**, 169.
 — radio-activity, Boltwood, **25**, 285; Curie, **21**, 326.
Positive rays, see **Rays**.
Potential in dark cathode space, Westphal, **27**, 84.
Poulton, E. B., Essays on Evolution, **27**, 193.
Pratt, H. S., Vertebrate Geology, **22**, 190.
Prescott, C., ilvaite, Cal., **26**, 14.
Pressure, measurement of high, **30**, 81.
Prisms, deviation of rays by, Uhler, **27**, 223.
Prosser, C. S., use of name Buena Vista for a geol. terrain, **21**, 181.
Proteids, Chemistry of, Mann, **21**, 407.
Proteins, Chemical Constitution, Plimmer, **27**, 271.
 — Vegetable, Osborne, **30**, 294.
Prouty, W. T., Meso-Silurian deposits of Maryland, **26**, 563.
Psycho-Biologie, Henry, **28**, 88.
Punnett, R. C., Mendelism, **24**, 508.
- Q**
- Quartz** as geologic thermometer, Wright and Larsen, **27**, 421.
 — formation of, Day and Shepherd, **22**, 275.
 — See **MINERALS**.
Quebec, metamorphic rocks of St. Francis Valley, Dresser **21**, 67.
Quebec, glaciation of Orford and Sutton Mts., Wilson, **21**, 196.
Queensland, volcanic rocks, Jensen, **23**, 70.
- R**
- Rabl**, Organbildende Substanzen, **23**, 468.
Radiant emission from the spark, new, Wood, **30**, 414.
Radiation from ordinary materials, Campbell, **21**, 249.
 — investigations, Coblentz, **27**, 188.
Radio-active element, new, Boltwood, **24**, 370; **25**, 365.
 — elements, chemistry, Strömholtz and Svedberg, **27**, 404; disintegration products, Boltwood, **23**, 77.
 — ions, etc., Righi, **23**, 463.
 — matter in earth and air, Blanc, **23**, 385.
 — minerals, lithium in, McCoy, **25**, 346; radium in, Rutherford and Boltwood, **22**, 1; Eve, **22**, 4; Gleditsch, **29**, 79.
 — Transformations, Rutherford, **23**, 64.
Radio-activity, Becker, Rutherford, Levin, **22**, 460; Marckwald, **26**, 400; Raffety, **27**, 406.
 — and Geology, Joly, **29**, 83.
 — alpha-rays, Taylor, **26**, 169; Duane, **26**, 465; Wheelock, **30**, 233.
 — atmospheric, Dadourian, **25**, 335.
 — of lead, McLennan, **25**, 147.
 — of polonium, Curie, **21**, 326.
 — of potassium salts, Henriot and Vavon, **28**, 409.
 — of radium salts, Boltwood, **21**, 409.
 — standard of, Duane, **26**, 521; the Curie, **30**, 416.
 — of thorium, Ashman, **27**, 65; Dadourian, **21**, 427; of thorium minerals and salts, Boltwood, **21**, 415; **24**, 93.
 — of uranium minerals, Boltwood, **25**, 269.
 — velocity of α -particles, retardation of, Rutherford, **21**, 399.
 — see **Radium**.
Radiochemistry, Cameron, **30**, 82.
Radiology and electricity, International Congress, **29**, 92; **30**, 415.

- Radiometer** for low pressures, Dewar, **25**, 258.
 — for observing small pressures, Dessar, **27**, 405.
- Radium**, absorption of the γ -rays by lead, Taomikoski, **28**, 76.
 — α -particle from, Rutherford and Geiger, **27**, 262.
 — alpha-rays from, properties, Rutherford, **21**, 172; range, Duane, **26**, 464; retardation, Taylor, **28**, 357; ionization by, Wheelock, **30**, 233.
 — atomic weight, Jones, **21**, 397; Curie, **24**, 439; Thorpe, **26**, 91.
 — chemical action of penetrating rays, Kernbaum, **28**, 408.
 — condensation, Rutherford, **27**, 487; in presence of water vapor, Curie, **25**, 145.
 — crystal photography, Walter, **21**, 466.
 — emanation, Ashman, **26**, 119; Curie and Gleditsch, **26**, 509; Curie, **26**, 510; Rutherford, **27**, 185, 336.
 — — action upon the elements of the carbon group, Ramsay and Usher, **29**, 80.
 — — in the atmosphere, Eve, **25**, 147; **26**, 577.
 — — electric discharges, Debiene, **28**, 494.
 — emission of electricity from, Duane, **26**, 1.
 — heat evolved by, von Schweidler and Hess, **27**, 83.
 — helium from, **27**, 262.
 — life of, Boltwood, **25**, 493.
 — liquid and solid, Gray and Ramsay, **27**, 485.
 — metallic, Curie, **30**, 349; Curie and Debiene, **30**, 347.
 — molecular weight, Perkins, **25**, 461.
 — in the earth, Strutt, **25**, 346; in tufa deposits, Schlundt, **26**, 575.
 — origin, Hahn, **25**, 79; Rutherford, **25**, 147.
 — practical application, Baxter and Tilley, **29**, 188.
 — production of, **29**, 189; production by actinium, Boltwood, **22**, 537.
 — standard, **30**, 416.
 — radio-activity of the salts of, Boltwood, **21**, 409.
 — and thorium, relative activity, Eve, **22**, 477.
- Radium** and uranium in radioactive minerals, Rutherford and Boltwood, **22**, 1; Eve, **22**, 4; Gleditsch, **29**, 79.
- Raffety, C. W.**, Radio-activity, **27**, 406.
- Raindrops**, influence of thunder on size of, Laine, **29**, 190.
- Randall, D. L.**, ferric chloride in the zinc reductor, **21**, 128; titration of mercurous salts, **23**, 137; behavior of molybdic acid, **24**, 313.
- Rankin, G. R.**, binary systems of alumina with silica, etc., **28**, 293.
- Ransome, F. L.**, Cripple Creek gold deposits, **23**, 466; apatitic minette from Washington, **26**, 337; bismite, **29**, 173.
- Raymond, P. E.**, Chazy formation and fauna, **22**, 348; Upper Devonian fauna with Clymenia, **23**, 116; age of the Tribes Hill formation, **30**, 344.
- Rays**, alpha, anode, canal, cathode, see **Alpha-rays**, etc.
 — of high penetrability, Wulf, **27**, 405.
 — magnetic, etc., Rigbi, **28**, 77.
 — positive, Thomson, **26**, 576; Wien, **27**, 84; **28**, 555.
 — — Doppler effect in, Trowbridge, **27**, 245.
 — — excitement by ultra-violet light, Dember, **28**, 496.
 — — power to produce phosphorescence, Kunz, **24**, 499.
 — Röntgen, see **Röntgen-rays**.
- Read, H. L.**, determination of chlorine, **28**, 544.
- Read, T. T.**, re-formation of soda-leucite, **21**, 294.
- Reflection**, positive changed to negative through pressure, Lummer and Sorge, **29**, 264.
- Refraktionstafeln**, de Ball, **22**, 82.
- Refrigeration**, Anderson, **25**, 524.
- Reid, H. F.**, California earthquake of 1906, **30**, 287.
- Relay**, telephone, J. Trowbridge, **21**, 339; Jensen and Sieveking, **21**, 173.
- Renshaw, G.**, Animal Romances, **27**, 193.
- Reyer, E.**, Geologische Prinzipienfragen, **26**, 238; Kraft, ökonomische, etc., **27**, 272; **29**, 560.

- Rhode Island**, geology of Iron Mine Hill, Johnson and Warren, **25**, 1.
 — granites, etc., Loughlin, **29**, 447.
Rice, W. N., Geology of Connecticut, **23**, 385.
Richards, R. W., Mineral Characters, **23**, 232.
Richardson, C., natural naphtha from Cuba, **29**, 439.
Richardson, G. B., Paleozoic formations in Trans-Pecos Texas, **25**, 474; stratigraphy of the upper Carboniferous in Texas and New Mexico, **29**, 325.
Ries, H., Economic Geology, **21**, 256; **30**, 426; Clays, **23**, 71; Clay-Working Industry, **28**, 563.
Righi, A., Modern Theory of Physical Phenomena, **21**, 328; Radio-activity, etc., **23**, 463; La Materia Radiante, **28**, 77.
Rignano, E., Centroepigenesis, **23**, 468.
Rio Grande, aggraded terraces, Keyes, **24**, 467.
 — Mississippian of, Gordon, **24**, 58.
Road Preservation, Judson, **26**, 589.
Roberts, E. J., separation of cerium, **29**, 45.
Robinson, B. L., Gray's Botany, **26**, 518.
Robinson, H. H., geol. map of Connecticut, **23**, 392; Tertiary peneplain of Plateau district, of Arizona, etc., **24**, 109.
Rochester quadrangle, geologic map, Hartnagel, **25**, 154.
Rock Minerals, Iddings, **23**, 152.
Rocks, Chemical Analysis, Washington, **30**, 89.
 — and Rock Minerals, Pirsson, **26**, 403.
 — and Rock-weathering, Merrill, **23**, 149.
 — Study of, Fletcher, **27**, 490.
 — Work on, Iddings, **28**, 502; Rosenbusch, **23**, 394; **26**, 583.
ROCKS.
 Alkaline rocks of eastern Africa, Arsandaux, **23**, 230.
 Analyses of igneous rocks, Osann, **21**, 183.
 Ancient volcanic rocks of North Carolina, Pogue, **28**, 218.

ROCKS.

- Aplite, Belknap Mts., N. H., Pirsson and Washington, **22**, 439.
 Barium in rocks, Langley, **26**, 123.
 Basaltic magma, crystallization, Fenner, **29**, 217.
 Camptonite, Pirsson and Washington, **22**, 498.
 Cancrinite-syenite from Kuolajärvi, Sundell, **21**, 254.
 Composition of rocks and meteorites compared, Merrill, **27**, 469.
 Cumberlandite, R. I., **25**, 12.
 Diabase dike in Potsdam sandstone, Virginia, Watson, **23**, 89.
 — of New Jersey, Lewis, **26**, 155.
 Dodecahedral jointing, Lahee, **29**, 169.
 Dutch Guiana, petrography, Beekman, **27**, 410.
 Elastic constants of rocks, Adams and Coker, **22**, 95.
 Eruptive rocks in Mexico, Guild, **22**, 159.
 Essexite, Belknap Mts., N. H., Pirsson and Washington, **22**, 495.
 Flow of rocks (marble), Adams and Coker, **29**, 465.
 Gabbro, altered, at Cumberland, R. I., Warren, **26**, 469.
 Gases in rocks, Chamberlin, **27**, 190.
 Gneiss, Gunstock, **22**, 505.
 Granite, crystallization in. Mackie, **29**, 366.
 — Lighthouse, near New Haven, Conn., Ward, **28**, 131.
 — at Quincy, Mass., astrophyllite in, Pirsson, **29**, 215.
 — and gneiss of Finland, Sederholm, **25**, 157.
 Granites and metamorphic sediments in Rhode Island, Loughlin, **29**, 447.
 Igneous intrusion, theory of, Daly, **26**, 17.
 — rocks of Finland and Kola peninsula, Hackman, **21**, 85.
 — — Natural History, Harker, **28**, 503.
 Kodurite, **24**, 181.
 Laterites, origin, Maclaren, **23**, 229.

ROCKS.

- Lava-flow, artificial, Pirsson, 30, 97, 427.
 Lujavrite, new, Lapland, 29, 367.
 Metamorphic rocks of St. Francis Valley, Quebec, Dresser, 21, 67.
 Minette, apatitic, Ransome, 26, 337.
 Mount Yamaska, Quebec, petrography, Young, 23, 69.
 Pegmatite, Massachusetts, Warren, 28, 449.
 Peridotites of N. Carolina, Pratt and Lewis, 21, 253.
 Petrography of Erythrea, East Africa, Manasse, 29, 87; of northwest Greenland, Belowsky, 21, 184; of Red Hill, N. H., Pirsson and Washington, 23, 257, 433; of the Urals, Duparc, 29, 272.
 Phenocrysts in igneous rocks, Miers, 21, 182.
 Plutonic rocks, classification, Hatch, 27, 411.
 Pre-Cambrian rocks, Georgetown, Colorado, Ball, 21, 371.
 Rocks from the Olympic Mts., Washington, Arnold, 28, 9.
 — of Tahiti, Lacroix, 30, 360.
 Scapolite rocks of America, Spurr, 25, 154.
 Schistosity by crystallization, Wright, 22, 224.
 Schists, crystalline, Grubermann, 23, 150.
 Silicate and carbonate rocks, analysis, Hillebrand, 30, 84, 88.
 Spessartite, Belknap Mts., N. H., Pirsson and Washington, 22, 453.
 Spherulitic crystallization, Pirsson, 30, 97, 427.
 Syenite, Belknap Mts., N. H., Pirsson and Washington, 22, 439.
 — of Plauenscher Grund, Washington, 22, 129.
 Unakite, Virginia, Watson, 22, 248.
 Volcanic rocks, central Italy, Washington, 23, 68; of No. Carolina, J. E. Pogue, Jr., 28, 218; of Queensland, Jensen, 23, 70.
 Volcanoes, Catalan, and their rocks, Washington, 24, 217;

ROCKS.

- Calderon, Cazorro and Fernandez-Navarro, 24, 282.
 Weathering of rocks, Hilgard, 21, 261; Merrill, 23, 149.
 Yamaskite, Young, 23, 70; related rock, from the Monteregian Hills, Canada, 28, 71.
 Rogers, A. F., pyrite crystals from Utah, 27, 467; anhydrite, etc., from Kansas, 29, 258.
 Rohwer, S. A., fossil insects from Colorado, 28, 533.
 Rolfe, G. W., Polariscopes, 21, 174.
 Roman comagmatic region, Washington, 23, 68.
 Röntgen radiators, secondary. Barkla, Crowther, 24, 499.
 — rays, absorption, Seitz, 26, 577.
 — — diffraction, Walter and Pohl, 25, 451.
 — — energy of, Carter, 23, 143.
 — — heating effects in metals, Bumstead, 21, 1; 25, 299.
 — — in instantaneous photography, Dessauer, 29, 82.
 — — ionization by, Herweg, 21, 327.
 — — polarization, Herweg, 28, 76.
 — — production of corpuscular rays by, Cooksey, 24, 285.
 — — refraction, Walter and Pohl, 28, 76.
 — — spectrum and absorption, Adams, 23, 9.
 — — transmission, Adams, 23, 375.
 — — tubes for use in magnetic field, Trowbridge, 25, 143.
 — — velocity, Marx, 22, 461; 27, 187.
 — — wave-length, Van der Waals, 23, 384.
 Rosenbusch, H., Festschrift, 22, 545; Physiographie der massigen Gesteine, 23, 394; 26, 583.
 Ross, W. H., radio-activity of thorium compounds, 21, 433.
 Royal Society, London, publications, 22, 192.
 Ruedemann, R., graptolites of New York, 26, 402; Paleozoic platform of North America, 30, 403.
 Rurer, R., Elements of Metallography, 28, 554.
 Russell, I. C., obituary notice of, 21, 481.

- Russia**, Piatigorsk, laccoliths of, V. de Derwies, **21**, 184.
- Russian** Carboniferous and Permian, Schuchert, **22**, **29**, 143.
- Rutherford, E.**, properties of α -rays from radium, **21**, 172; retardation of velocity of α particles, **21**, 399; radium and uranium in radio-active minerals, **22**, **1**; Radio-active Transformations, **23**, 64.
- S**
- Sabine, W. C.**, Physical Measurements, **21**, 467.
- Sadler, M. E.**, Moral Instruction in Schools, **26**, 591.
- St. Louis** district, water resources, Bowman and Reeds, **25**, 353.
- Salet, P.**, Spectroscopie Astronomique, **28**, 556.
- Salisbury, R. D.**, Geology, **21**, 400; Outlines of Geologic History, **30**, 354.
- Salt**, occurrence, etc., Buschman, **23**, 153; **28**, 83.
- Salts**, specific gravity of soluble, Buchanan, **21**, 25.
- Samoa**, geology, Friedländer, **30**, 425.
- Samwel Cave**, California, exploration, Furlong, **22**, 235.
- San Domingo** Solenodon, Verrill, **24**, 55.
- Sands**, black, of Pacific slope, Day and Richards, **23**, 319.
- San Francisco** Earthquake, **22**, 82; **27**, 48; **30**, 287.
- Sargent, R. H.**, Research in China, **25**, 349.
- Sarle**, on Arthropycus and Dædalus, **21**, 330.
- Savage, T. E.**, lower-Paleozoic stratigraphy in Illinois, **25**, 431; Ordovician and Silurian formations in Illinois, **28**, 509.
- Schaffers, V.**, Influence Machines, **28**, 79.
- Schaller, W. T.**, siderite and barite from Maryland, **21**, 364.
— composition of molybdc ocher, **23**, 297.
— mineralogical notes, **24**, 152; mercury minerals from Texas, **24**, 259.
— powellite and molybdite, **25**, 71; new boron minerals, **25**, 323.
- Schaller, W. T.**, bismite, **29**, 173; refractive index of Canada balsam, **29**, 324; composition of hulsite and paigeite, **29**, 543. — ludwigite from Montana, **30**, 146; mosessite, new mineral from Texas, **30**, 202; identity of podolite with dahllite, **30**, 309; identity of stelznerite with antlerite, **30**, 311; barbierite, **30**, 358.
- Scherzer**, Canadian glaciers, **25**, 261.
- Schistosity** by crystallization, Wright, **22**, 224.
- Schmidt's** Alpine sections, **25**, 155.
- Schuchert, C.**, Russian Carboniferous and Permian, **22**, **29**, 143; Paleogeography of North America, **29**, 552; on Syringothyris, **30**, 223.
- Schultze, A.**, Graphic Algebra, **25**, 534.
- Schwarz, E. H. L.**, plains in Cape Colony, **24**, 185.
- Schwingungserzeugung**, Problem der, Barkhausen, **24**, 283.
- Scienza**, Rivista di, **27**, 100.
- Sclerometer**, new, Parsons, **29**, 162.
- Scotland**, geologic structure of Highlands, **25**, 155.
- Searle, G. F. C.**, Experimental Electricity, **26**, 580.
- Sears, J. H.**, geology, etc., of Essex Co., Mass., **21**, 255.
- Sederholm, J. J.**, Finland granite and gneiss, **25**, 157.
- Sedgwick, W. T.**, Human Mechanism, **22**, 549; Physiology, **24**, 448.
- Seidell, A.**, Solubilities of Inorganic and Organic Substances, **24**, 440.
- Seismic** Geology, Hobbs, **23**, 309.
— See **Earthquakes**.
- Seismological** Committee, American Association, **23**, 159.
- Seismology**, de Ballore, **25**, 262.
- Selenium**, electric properties, Ries, **27**, 338.
- Sellards, E. H.**, Permian insects, **22**, 249; **23**, 345; **27**, 151.
- Sellers, J. F.**, Chemical Analysis, **28**, 554.
- Senn, G.**, Pflanzen-Chromatophoren, **26**, 587.
- Serviss, S. B.**, internal temperature gradient of metals, **24**, 451.

- Seward, A. C.**, Darwin and Modern Science, **28**, 505; Fossil Plants, **30**, 356.
- Shaft** governors, Trinks and Housum, **22**, 82.
- Shaler, N. S.**, Autobiography, **29**, 90.
— obituary notice, **21**, 408, 480.
- Shepherd, E. S.**, lime-silica series of mineral formation, **22**, 265; binary systems of alumina with silica, etc., **28**, 293.
- Sherrington, C. S.**, Integrative Action of Nervous System, **23**, 73.
- Shimer, H. W.**, *Strenuella strenua*, **23**, 199, 319; Cambrian transition fauna of Braintree, Mass., **24**, 176; stratigraphy of the Mt. Taylor region, N. M., **25**, 53.
- Silicates**, constitution of, Tschermak, **22**, 88.
— relation of refractive index and density, Larsen, **28**, 263.
- Silliman Memorial Lectures**, Rutherford, **23**, 64; Sherrington, **23**, 73.
- Slaty cleavage**, Becker, **24**, 1.
- Smillie, R.**, ester formation, **26**, 290.
- Smith, A.**, Inorganic Chemistry, **22**, 345.
- Smith, B.**, Miocene drum fish, **28**, 275.
- Smith, E. F.**, Electro-Analysis, **24**, 498.
- Smith, L. L.**, Australian meteorite, **30**, 264.
- Smith, M. F.**, parallax investigation of 162 stars, **22**, 471.
- Smithsonian Institution**, publications, **24**, 506; **30**, 160; report of Board of Regents, for year ending June 1905, **23**, 74, 242; 1906, **24**, 506; 1907, **27**, 196; 1908, **29**, 197; report of Secretary for year ending June 1905, **21**, 259; 1906, **23**, 242; 1907, **25**, 160; 1908, **27**, 196; 1909, **29**, 196.
— C. D. Walcott appointed Secretary, **23**, 160.
— Astrophysical Observatory, **25**, 162, 431.
- Sodium vapor**, rotation spectra of, Wood, **23**, 64.
- Soil Fertility**, Hopkins, **30**, 158.
- Soils**, Bureau of, 1904 Report, **22**, 550.
- Soils**, formation of, Hilgard, **21**, 261; **22**, 468.
- Solar**, see **Sun**.
- Solereder, H.**, Anatomy of Dicotyledons, **26**, 585.
- Solubilities of Inorganic and Organic Substances**, Seidell, **24**, 440.
- Solutions**, absorption spectra, Jones and Anderson, **28**, 78.
- Sosman, R. B.**, nitrogen thermometer from zinc to palladium, **29**, 93; platinum-rhodium thermoelement, **30**, 1.
- Sound in fluids**, Dörsing, **25**, 348.
— perception of direction, Rayleigh, **23**, 223; Bowdler, **25**, 348.
— Text-book, Barton, **28**, 77.
— velocity of, **25**, 348, 451.
- South Africa**, Passarge, **25**, 155.
— diamond fissures, Harger, **21**, 471; Stone implements, Johnson, **23**, 465.
- South Australia**, geol. survey of the Northern Territory, **30**, 85.
- South Carolina**, Pleistocene deposits, Pugh, **22**, 186.
- Spark potentials**, Toepler, **21**, 249.
— spectra, Berndt, **27**, 187.
— See **Electric**.
- Specific gravity of soluble salts**, determination of, Buchanan, **21**, 25.
— heats of silicates and platinum, White, **28**, 334.
- Spectra**, absorption of solutions, Uhler and Wood, **24**, 442; Jones and Anderson, **28**, 78.
— flame, Hemsalech and de Wetteville, **25**, 450.
- Spectroscopic**, Handbuch der, Kayser, **25**, 522; **30**, 349.
— Astronomique, Salet, **28**, 556.
- Spectrum of Auer burner**, Rubens, **21**, 172.
— emission, of mercury, Castelli, **25**, 148.
— extreme infra-red, Rubens and Hollnagel, **29**, 552.
— of the high tension flaming discharge, Walter, **21**, 465.
— of nitrogen, Lawton, **24**, 101.
— of Röntgen rays, Adams, **23**, 91.
- Spencer, Herbert**, Life and Letters, Duncan, **27**, 99.
- Spencer, J. W. W.**, Falls of the Niagara, **25**, 455.
- Spherulitic crystallization**, **30**, 97, 425.

- Spider thread**, strength, Benton, 24, 75.
- Spiritism**, Studies in, Tanner, 30, 431.
- Spurr, J. E.**, geology of Tonopah mining district, Nevada, 21, 83; ore deposits of Silver Peak Quadrangle, 23, 466; scapolite rocks of America, 25, 154.
- Standards**, Bureau of, bulletin, 24, 87, 442.
- Stanley, F. C.**, chemical composition of amphibole, 23, 23.
- Stansbie, J. H.**, Metallurgical Chemistry, 23, 383.
- Stanton, T. W.**, geology of the Judith River Beds, 21, 177; Fox Hills sandstone, etc., 30, 172.
- Star fishes**, new species, Verrill, 28, 59.
- Stars**, investigation of parallax, Chase, Smith and Elkin, 22, 471.
- Steam**, superheated, specific heat, Rubens and Henning, 21, 173.
- Steel**, permeabilities and reluctivities, Peirce, 27, 273.
- Stegosaurus**, armor of, Lull, 29, 201; restoration, Lull, 30, 361.
- Steinmann, G.**, Paleontology, 26, 240; Geol. Grundlagen der Abstammungslehre, 27, 341.
- Stellar Evolution**, Hale, 26, 577.
- Stereochemistry**, Stewart, 25, 521.
- Stevens, W. C.**, Plant Anatomy, 25, 363.
- Stewart, A. W.**, Stereochemistry, 25, 521; Organic Chemistry, 27, 337.
- Stokes, Sir G. G.**, Mathematical and Physical Papers, 21, 174.
- Memoir and Correspondence, Larmor, 24, 81.
- Stone Implements**, So. Africa, Johnson, 23, 465.
- Suess, E.**, das Antlitz der Erde, 29, 269.
- Sun**, eclipse of, 1907, 21, 245.
- fluctuations in radiation of, Newcomb, 26, 93.
- Modern Theories, Bosler, 30, 295.
- relation of radiation and meteorological elements in U. S., Bigelow, 25, 413.
- Swiss Alpine lakes**, Bourcart, 22, 468.
- T**
- Tahiti**, rocks of, Lacroix, 30, 360.
- Tanner, A. E.**, Spiritism, 30, 431.
- Tassin, W.**, analysis of Modoc, Kansas, meteorite, 21, 356; of Ainsworth, Nebr., meteorite, 25, 106.
- Taylor, T. S.**, retardation of alpha-rays, 26, 169; 28, 357.
- Telegraph waves**, wireless, Kiebitz, 23, 461.
- Telegraphie sans fil**, Van Dam, 25, 452.
- Telegraphy**, see **Wireless**.
- Telemeter**, new form, Wright, 26, 531.
- Telephone relay**, microphone contact for, Jensen and Sieveking, 21, 173; Trowbridge, 21, 339.
- Tellurium**, see **CHEMISTRY**.
- Temiskaming**, cobalt-nickel arsenides, Miller, 21, 256; crustal warping in, Pirsson, 30, 25.
- Temperature** amplitudes, inversion of, Bigelow, 30, 115.
- critical, Gregory, 23, 221.
- measurements of high, Day and Clement, 26, 405; Day and Sosman, 29, 93; Sosman, 30, 1.
- Terraces**, high level, in So. Eastern Ohio, Hubbard, 25, 108.
- Texas**, chalk formation, Gordon, 27, 369.
- Pelycosaurian from, Matthew, 27, 93.
- Jurassic formation, paleontology, Cragin, 21, 179.
- new mercury mineral, Hillebrand, 21, 85.
- Estacado meteorite, Howard, 21, 186.
- Paleozoic formations in, Richardson, 25, 474.
- Thermodynamics** of Gas-Reactions, Haber and Lamb, 26, 92.
- Thermoelectric force**, influence of pressure upon, Hörig, 27, 338.
- motive forces of potassium and sodium, Barker, 24, 159.
- Thermoelement**, platinum-rhodium, Sosman, 30, 1.
- Thermometer**, nitrogen, Day and Clement, 26, 405; Day and Sosman, 29, 93; Holborn and Valentiner, 23, 143.
- quartz, as geologic, Wright and Larsen, 27, 421.
- Thomson, J. J.**, canal rays, 23, 461; Korpuskular Theorie der Materie, 26, 578.

- Thorium**, radio-activity, Ashman, 27, 65; Dadourian, 21, 427.
 — compounds, radio-activity, McCoy and Ross, 21, 433.
 — and helium, 25, 146.
 — minerals and salts, radio-activity, Boltwood, 21, 415.
 — new intermediate compound, Hahn, 24, 79.
 — products, rays from, Hahn, 24, 374.
 — salts, radio-activity, Boltwood, 24, 93.
Thornton, W. M., Jr., enargite, covellite and pyrite, 29, 358.
Thorp, F. H., *Industrial Chemistry*, 23, 460.
Tillotson, E. W., Jr., orthoclase twins, 26, 149; esters and esterification, 26, 243, 257, 264, 267, 275.
Time distribution in Paris, 25, 268.
Todd, D., total solar eclipse, Jan., 1907, 21, 245.
Topographic Maps, Salisbury and Atwood, 27, 265.
Tower, O. F., *Qualitative Chemical Analysis*, 27, 486.
Trades and anti-trades, 23, 398.
Transvaal, mines of, Moreau, 22, 89.
Travis, C., crystals in light parallel to an optic axis, 29, 427.
Trigonometry, Plane, Robbins, 29, 200.
Trowbridge, C. C., interlocking of feathers in flight of birds, 21, 145.
Trowbridge, J., magnetic field and coronal streamers, 21, 189; telephone relay, 21, 339; phosphorescence produced by canal rays, 25, 141; use of magnetic field with X-ray tubes, 25, 143; Doppler effect in positive rays, 27, 245; electric discharges through hydrogen, 29, 341.
Tschermak, G., silicate formulas, 22, 88.
Tufts, F. L., photometric measurements, 22, 531.
Turtles, marine, Wieland, 27, 101.
 — Fossil, of No. America, Hay, 26, 516.
 — from Upper Harrison beds, Loomis, 28, 17.
Tungsten, melting point of pure, Wartenberg, 24, 440.
Turkestan, Exploration, Pumphelly, 27, 413.
Twenhofel, W. H., Silurian section at Arisaig, Nova Scotia, 28, 143; peat beds of Anticosti Island, 30, 65.
Tyler, J. M., *Man in the Light of Evolution*, 27, 419.

U

- Uhler, H. S.**, deviation of rays by prisms, 27, 223.
Uinta Mts., glaciation, Atwood, 27, 340.
Ultra-red radiation in gases, influence of pressure upon the absorption of, Bahr, 30, 349.
Ultra-violet rays, sterilization by, Daguerre, 30, 414.
Underhill, C. R., *Wireless Telegraphy*, 27, 406.
United States, see *Geol. Reports, Coast Survey, National Museum*.
 — Dep't of Agriculture, 22, 550.
 — Economic Geology of, Ries, 21, 256.
 — magnetic tables, Bauer, 27, 263.
Urals, northern, geology and petrography, Duparc, 29, 272.
Uranium, disintegration products, Boltwood, 23, 77.
 — See also *Radio-activity*.

V

- Vacuum-tube**, rectification effect, Perkins, 25, 485.
Valency, Theory of, Friend, 27, 337.
Van Horn, F. R., proustite and argentite, 25, 507.
Van Name, R. G., *Scientific papers of J. Willard Gibbs*, 23, 144; velocities of reactions between metals and dissolved halogens, 29, 237; crystals of silver sulphate and dichromate, 29, 293.
Veatch, A. C., localities of supposed Jurassic fossils, 21, 457; meaning of term Laramie, 24, 18; geology of Southwestern Wyoming, 26, 239.
Vehicles, self-propelled, Homans, 23, 399.

- Venice**, Lagoon of, **21**, 407; **23**, 397.
- Vermont** geol. survey, see **GEOLOGICAL REPORTS**.
- Tertiary lignite of, Perkins, **23**, 237.
- Verrill, A. E.**, Bermuda Islands, **24**, 179, 180; grapsoid crustacean, **25**, 119; decapod crustacea, **25**, 534; new starfishes from the Pacific, **28**, 59; obituary notice of Alexander Agassiz, **29**, 561.
- Verrill, A. H.**, new species of *Dynastes*, Dominica, **21**, 317; avifauna of Dominica, **21**, 337; *Solenodon* of San Domingo, **24**, 55; *Hercules* beetles from Dominica Island, **24**, 305.
- Vertebrates**, Origin of, Gaskell, **27**, 192; **30**, 293.
- Vertical**, apparent variations of, Burbank, **30**, 323.
- Verworm, M.**, *Allgemeine Physiologie*, **27**, 419.
- Vesuvius**, ammonia from eruption, Stoklasa, **22**, 540.
- characteristics, etc., Perret, **28**, 413.
- eruption April 1906, Johnston-Lavis, **27**, 410.
- map of, **26**, 166.
- radio-activity of ashes, **22**, 460.
- Vinal, G. W.**, electric arc, **28**, 89.
- Virginia**, lead and zinc deposits, Watson, **21**, 255.
- geol. survey, see **GEOLOGICAL REPORTS**.
- Mineral Resources, Watson, **28**, 82.
- Voigt, W.**, *Magneto- und Electro-Optik*, **26**, 579.
- Volcanic** activity, Barus, **24**, 483.
- eruptions, submarine, Washington, **27**, 131.
- Volcanoes** active, Mercalli, **24**, 282.
- of Catalonia, **24**, 217, 282.
- Hawaiian, Brigham, **29**, 363.
- of St. Vincent and Martinique, Anderson and Flett, **27**, 89; Lacroix, **26**, 400.
- See **Vesuvius**.
- Vulcanology**, Institute of, **30**, 430.
- W**
- Wadsworth, M. E.**, Crystallography, **30**, 89.
- Walcott, C. D.**, Cambrian of China, **22**, 188; Cambrian geology of Cordillera area, **27**, 414; Cambrian geology and paleontology, **30**, 419.
- Walker, T. L.**, tungstite and meymacite, **25**, 305.
- Ward, F.**, Lighthouse granite near New Haven, Conn., **28**, 131; mineral notes, **28**, 185.
- Ward, H. A.**, Columbian meteorite localities, **23**, 1.
- Ward, H. L.**, copper oxalate in analysis, **27**, 448.
- Ward, H. M.**, Trees, **27**, 491.
- Warren, C. H.**, yttracrasite, **22**, 515; niobium and tantalum separation, **22**, 520; geology of Iron Mine Hill, R. I., **25**, 1; kröhnkite, natrochalcite, etc., from Chile, **26**, 342; alteration of augite-ilmenite groups in Cumberland, R. I., gabbro, **26**, 469; pegmatite in the granite of Quincy, Mass., **28**, 449.
- Wasatch** deposits, Loomis, **23**, 356; fossil bird, Loomis, **22**, 481.
- Washburn** Observatory, see **Observatory**.
- Washington, H. S.**, syenite of Plauenscher Grund, **22**, 129; petrography of Belknap Mountains, **22**, 439, 493; Roman conglomeratic region, **23**, 68; geology of Red Hill, N. H., **23**, 217, 433; Catalan volcanoes and their rocks, **24**, 217; forms of Arkansas diamonds, **24**, 275; kaersutite, from Linosa and Greenland, **26**, 187; submarine eruptions near Pantelleria, **27**, 131; feldspar from Linosa, **29**, 52; *Chemical Analysis of Rocks*, **30**, 89.
- Washington**, rocks from the Olympic Mts., Arnold, **28**, 9.
- Water**, amount in cloud, **27**, 262.
- decomposition, Kernbaum, **28**, 409.
- rôle of in tremolite, etc., Allen and Clement, **26**, 101.
- supply, purification by hypochlorites, **29**, 263.
- temperature of freezing in sealed tubes, Miers and Isaac, **22**, 539.
- vapor, decomposition by electric sparks, Holt and Hopkinson, **26**, 511.

- Waterglass**, Ordway, **24**, 473.
Waters, artesian, of Costilla Co., Colorado, Headden, **27**, 305.
 — ground, of the Indio region, California, Mendenhall, **27**, 340.
Watson, T. L., unakite in Virginia, **22**, 248; diabase dike in Potsdam sandstone, Va., **23**, 89; Mineral Resources of Virginia, **28**, 82.
Watt, G., Commercial Products of India, **27**, 417.
Waves, resistance due to obliquely moving, Rayleigh, **28**, 495.
 — See also **Electric**.
Weather Service, Maryland, **26**, 100; **30**, 430.
Weathering and erosion as time-measures, Leverett, **27**, 349.
Weed, L. H., action of dry ammonia, **24**, 479; estimation of chromium, **26**, 85; standards in alkalimetry, etc., **26**, 138, 143.
Weidman, S., marignacite from Wisconsin, **23**, 287; irvingite, **23**, 451.
Weights and Measures, Evolution, Hallock and Wade, **22**, 346.
Wellcome Research Laboratories, Khartoum, Reports, **23**, 155; **29**, 91.
Weller, S., Cretaceous paleontology of New Jersey, **25**, 152.
Wells, R. C., new occurrence of hydrogiobertite, **30**, 189.
Western Australia geol. survey, see **GEOLOGICAL REPORTS**.
West Virginia geol. survey, see **GEOLOGICAL REPORTS**.
Wetterkunde, Börnstein, **22**, 81.
Wheeler, J. T., Zonal Belt Hypothesis, **27**, 265.
Wheelock, F. E., ionization produced by alpha rays, **30**, 233.
Whitlock, H. P., calcite from West Paterson, N. J., **24**, 426.
White, W. P., polymorphic forms of calcium metasilicate, **21**, 89; diopside, calcium and magnesium metasilicates, **27**, 1; specific heats of silicates and platinum, **28**, 334; melting point determination, **28**, 453; melting point methods at high temperatures, **28**, 474.
Wickham, H. F., fossil insects from Florissant, **26**, 76; **28**, 126; **29**, 47.
Wiedersheim's Comparative Anatomy of Vertebrates, Parker, **25**, 160.
Wieland, G. R., historic cycads, **25**, 93; accelerated cone growth in *Pinus*, **25**, 103; notes on Paleobotany, **25**, 354; revision of the Protostegidæ, **27**, 101; armored saurian from the Niobrara, **27**, 250.
Wilde, H., Celestial Ejectamenta, **30**, 296.
Williams, R. P., Chemistry, **30**, 347.
Williams, S. R., method of determining coefficients of expansion, **28**, 180.
Willis, B., Research in China, **25**, 349; Outlines of Geologic History, **30**, 354.
Williston, S. W., North American Plesiosaurs, **21**, 221.
Wilson, A. W. G., glaciation of Orford and Sutton Mts., Quebec, **21**, 196.
Wilson, E. B., Cyanide Processes, **26**, 576.
Wilson, Edwin B., divergence and curl, **23**, 214.
Wilson, R. W., Astronomy, **22**, 191.
Winchell, N. H. and A. N., Optical Mineralogy, **27**, 412.
Winds, trades, etc., **23**, 398.
Winton, A. L., Microscopy of Vegetable Foods, **21**, 335.
Wireless Telegraphy, Massie and Underhill, **27**, 406; Marconi, **30**, 349.
 — — directive system, Bellini and Tosi, **26**, 576.
 — — influence of the earth in, Sachs, **21**, 80.
 — — relation of electromagnetic waves to, Zenneck, **24**, 441.
Wisconsin geol. survey, see **GEOLOGICAL REPORTS**.
 — geology of north central, Weidman, **24**, 500.
 — lead and zinc deposits, Grant, **21**, 470.
Wollastonite and pseudo-wollastonite, Allen and White, **21**, 89; Day and Shepherd, **22**, 265.
Wood, R. W., Physical Optics, **22**, 193.
Wood-Turning, Ross, **28**, 566.
Woodworth, J. B., Shaler expedition to Brazil, etc., **26**, 404.

Worlds, Evolution of, Lowell, 29, 199.

— Two New, d'Albe, 25, 148.

Wright, C. T., Physical Geography, 23, 323.

Wright, F. E., optical study of wollastonite and pseudo-wollastonite, 21, 103; determination of feldspars, 21, 361.

— interference figures, under the microscope, 22, 19; schistosity produced by crystallization, 22, 224; optical study on the lime-silica minerals, 22, 265; formation of minerals, $MgSiO_3$, 22, 385.

— measurement of the optic axial angle of minerals, 24, 317.

— optical studies on kaersutite, 26, 187; measurement of extinction angles, 26, 349; bi-quartz wedge plate, 26, 391; new tele-meter, 26, 531; interference phenomena, 26, 536; three contact minerals from Mexico, 26, 545.

— optical study of diopside, etc., 27, 28; artificial light for microscope, 27, 98; new goniometer lamp, 27, 194; sources for monochromatic light, 27, 195; quartz as a geologic thermometer, 27, 421.

— optical study of compounds of alumina with silica, etc., 28, 315.

— feldspar from Linosa, 29, 52; new petrographic microscope, 29, 407; new ocular for use with, 29, 415.

— plumbojarosite, 30, 191.

Wyoming, coal resources, 21, 473.

— Eocene fossils, Cockerell, 28, 447.

— geology, Veatch, 26, 239.

— supposed Jurassic fossils of Fremont, Veatch, 21, 457.

X

X-ray, new kind, Seitz, 21, 80.

X-rays, see Röntgen rays.

Y

Yale Observatory, transactions, 22, 471.

Young, G. A., geology of Mt. Yamaska, 23, 69.

Z

Zeeman effect, Dufour, 27, 338; Gmelin, 27, 405; Hale, 26, 577.

Zoological Congress, seventh international, meeting at Boston, 24, 92.

Zoology, Linville and Kelly, 22, 476; 23, 469; T. H. Morgan, 23, 241.

— Invertebrate, Drew, 24, 382.

— Vertebrate, Pratt, 22, 190.

ZOOLOGY.

African blood-sucking flies, Austin, 29, 92.

Animal Histology, Dahlgren and Kepner, 27, 97.

Animal Romances, Renshaw, 27, 193.

Animals, Life of, Ingersoll, 22, 191.

Annelids, British, McIntosh, 25, 530.

— tubicolous, Bush, 23, 52, 131.

Apodous holothurians, Clark, 26, 100.

Avifauna of Dominica, A. H. Verrill, 21, 337.

Birds of Chicago, Woodruff, 24, 92.

— Handlist, Sharpe, 29, 195.

— interlocking of feathers in flight, Trowbridge, 21, 145.

— origin of, Pycraft, 22, 547.

— of the Southern Lesser Antilles, Clark, 21, 337.

Brachyura of the Eastern Tropical Pacific Expedition, Rathbun, 24, 450.

Cahow in Bermuda, Mowbray, 25, 361.

Cambridge Natural History, 29, 92.

Copepods, No. American parietic, Wilson, 25, 158.

Crayfishes, young of, Andrews, 24, 449.

Crustacea decapod, Bermuda, Verrill, 25, 534.

— of the North Pacific Exploring Expedition, Stimpson, 24, 449.

— of Norway, Sars, 21, 337; 25, 158.

Dynastes, new species from Dominica, A. H. Verrill, 21, 317; 24, 305.

Echinoderma, Bather, 21, 330; Grant, 23, 315.

ZOOLOGY.

- Echinoidea of Danish Expedition, Mortensen, **25**, 159.
 Echinoneus, teeth of, Agassiz, **28**, 490.
 Economic Zoology, Osborn, **27**, 97.
 Fauna of the Maldives and Laccadives, Gardiner, **23**, 241.
 Fishes of North Carolina, Smith, **25**, 159.
 Flies, Blood-sucking British, Austen, **22**, 476; African, **29**, 92.
 Frog, Biology of, Holmes, **22**, 190.
 Grapsoid crustacean, Verrill, **25**, 119.
 Homoptera, Catalogue, Distant, **22**, 476.
 Hymenoptera in the British Museum, Morley, **30**, 94.
 Inheritance, works on, Rabl, Rignano, **23**, 468.
 Insects, instincts, etc., Fabre, **25**, 89.
 Invertebrates of Boston Soc. Nat. History, Sheldon, **21**, 336, 475.
 Isopods of No. America, Richardson, **21**, 337.
 Lagenidæ, developmental stages, Cushman, **21**, 180.
 Lepidoptera Phalænæ in the British Museum, Hampson, **23**, 321; **27**, 492; **28**, 507; **30**, 94.
 Madreporaria of Amboina, Bedot, **25**, 158.
 — of the Hawaiian Islands, Vaughan, **25**, 158.

ZOOLOGY.

- Madreporian corals in the British Museum, **21**, 474.
 Mammals, E. Ingersoll, **22**, 191.
 — Adirondack, Grant, **23**, 76.
 Orthoptera, British Museum, Kirby, **23**, 321; **30**, 93.
 — North American, Cummings, **30**, 93.
 Parasites of Bermuda fishes, Linton, **25**, 159.
 Phasmids, von Wattenwyl and Redtenbacher, **26**, 242.
 Pyramidellidæ, notes on the family, Bush, **27**, 475.
 Rhizopoda, British freshwater, Cash and Hopkinson, **30**, 93.
 Solenodon of San Domingo, Verrill, **24**, 55.
 Starfishes from the Pacific coast, new, Verrill, **28**, 59.
 Ticks, monograph on, **27**, 193.
 Tierwelt, die Antike, O. Keller, **30**, 88.
 Tunicata, British, Alder and Hancock, **23**, 398.
 Vertebrates, Cave, of America, Eigenmann, **29**, 270.
 — Comparative Anatomy, Wiedersheim, Parker, **25**, 160.
 — Origin, Gaskell, **27**, 192; Gaskell et al., **30**, 293.
 Whales, beaked, in the U. S. National Museum, True, **30**, 422.
 Zellforschung, Archiv für, **27**, 97.
 See also **GEOLOGY**.

